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INCREASING WEATHER AWARENESS - HURRICANES

An Assessment Study of School-Based Hurricane Education
in the Gulf and Atlantic Coastal States

Final Report

COASTAL ZONE
INFORMATION CENTER

Ira W. Geer
National School Weather Project
State University College
State University of New York
Brockport, New York 14420

Submitted to: Office of Disaster Preparedness
National Weather Service
National Oceanic and Atmospheric Administration
United States Department of Commerce

December 1978

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This report completes work in
Contract No. 01-8-M01-2671

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U. S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

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INCREASING WEATHER AWARENESS - HURRICANES

An Assessment Study of School-Based Hurricane Education
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ABSTRACT

The assessment study determined there were 18.5 million public school students enrolled in some 31,000 schools in the coastal states extending from Texas to Maine during the 1976-77 school year. In spite of the vulnerability of the Gulf and Atlantic coastal areas to major hurricane landfalls, almost none of the coastal states offered hurricane instruction beyond that found in conventional curricular materials. State education department personnel interviewed in the study were in agreement that the need exists for additional school-based hurricane instruction in their states. The consensus was that relatively short instructional units containing at least some locally-oriented materials would have excellent potential for widespread implementation in existing courses taught in coastal schools. It was also concluded that hurricane instruction should be approached from a broad perspective including scientific and social aspects and, preferably, after learning experiences on general weather awareness have been presented. The study also found that in the majority of states information and expertise exist for the development of locally-based curricular material components, and key education personnel are available to assist in implementation efforts. The study concludes by recommending that a pilot study be undertaken to develop curricular materials and devise implementation strategies leading to eventual school-based hurricane awareness instruction in all threatened coastal areas.

Chapter I

INTRODUCTION

Background

A great need exists to raise the level of public understanding and awareness of the weather and its impacts. This is especially true in areas prone to hazardous weather occurrences, where life and property are particularly susceptible. In view of the urgency of the problem of the vulnerability of Atlantic and Gulf coastal areas to the effects of major hurricanes, a study was undertaken to (1) assess the status of school-based hurricane educational activity in the Atlantic and Gulf coastal states and (2) outline a plan of action for the development and implementation of education programs leading to adequate public hurricane awareness, preparedness and response.

The American Meteorological Society, in a "Statement of Concern on the Hurricane Problem" (Bulletin of the American Meteorological Society, Vol. 57, No. 8, August 1976, pp. 996-97), succinctly describes the problem of rapid population growth in hurricane-prone coastal areas with little regard or preparation for coping with the myriad problems associated with a major hurricane's landfall. The "Statement" asks (a) whether individuals and families will respond properly to hurricane warnings and advice and (b), even if they do respond, how many people can be evacuated ahead of a fast-moving storm in locations where little, if any, consideration has been given to hurricane preparedness. The "Statement" is a plea for realistic planning at state, county and local levels. It calls for accelerated efforts to promote proper hurricane awareness and response to the hurricane threat. It ends with the comment, "If we do not initiate ways of informing our coastal communities of the hurricane problem, Mother Nature will impose her own education program which is swift and severe."

Hurricane Hazard in the United States: A Research Assessment

(Waltraud A. R. Brinkman, NSF-RA-E-75-007, 1975) examined the problem of developing adequate hurricane preparedness and response. A survey of research into the various aspects of the hurricane threat showed that over an 18-year period (1955-1972) the research emphasis has been on the physical aspects of hurricanes. The record shows only minimal research activity on the social aspects of these phenomena.

The study points out that losses from hurricanes can be either borne or reduced. Losses may be reduced in three major ways -- by modifying the hazard, by strengthening the physical environment, or by altering the traditional organizational and individual behavior. Five areas of research were identified and ranked in order of priority as necessary to ameliorate the effects of hurricanes as follows: (1) land use management, (2) warning systems, (3) insurance, (4) hurricane modification, and (5) relief and rehabilitation. The most promising areas of research were judged to be those concerned with damage-mitigating adjustments: land use management; improved warning system involving detection, dissemination, and response; and the adoption of building codes and community preparedness plans. Emphasis was made that human behavior is necessarily involved in both modifying the hazard and in strengthening the environment.

The study indicated an effective hurricane warning system is the best immediate line of defense against massive loss of life within the increasingly crowded coastal areas. A major component of an adequate warning system is individual and family response to hurricane-threat information. The report recommends new research attempts to determine what impact, if any, various types of public education efforts have on response behavior.

The study Reactions to Storm Threat During Hurricane Eloise (Gerald O. Windham, Ellen I. Posey, Peggy J. Ross, and Barbara G. Spencer, Social Science Research Center Report 51, Mississippi State University, March 1977) was an attempt to learn more about the perceptions and reactions of persons to a hurricane threat and related warning messages. The study concluded that coastal residents lack adequate understanding of the nature of the hurricane and its dangers. Persons interviewed

in the study indicated little or no knowledge of the immensity of a hurricane, the location of the strongest winds, or the existence and danger of the storm surge.

The results of the study showed that short-term residents of the area were more likely to heed warnings to evacuate than were those who had resided in the area for a number of years and had adjusted to the hurricane experience or "culture" of the area. Apparently, the newcomer was aware of his/her limited knowledge about and lack of experience with hurricanes and had made the decision in advance to evacuate if told to do so. The long-time resident, relying on an artificial hurricane experience from others or having had personal peripheral hurricane experience, had apparently been lulled into a false sense of security and was therefore less likely to evacuate during a storm. To paraphrase a Chinese proverb, the long-time resident "did not know he/she did not know." The newcomer, on the other hand, knew he/she did not know and acted accordingly.

Another finding in the study was that the typical stayer was apparently less knowledgeable about wind and storm surge predictions than most of those who evacuated. These same less informed persons were also less satisfied with the information and warnings issued by the National Weather Service. In other words, the more knowledgeable the person was about hurricanes the better equipped he/she was to interpret and use weather information and warnings.

It was a major conclusion of the study that residents of coastal areas need at least some understanding of the nature of hurricanes if (a) they are to correctly interpret hurricane information and adequately respond to warnings, and (b) the number of potentially dangerous misconceptions people have about hurricanes are to be reduced. The study recommends that efforts be taken to educate the public on basic knowledge about hurricanes such as storm size, location of maximum winds and the storm surge.

Human behavior in crisis-threatening situations is complex. Re-educating individuals and the community to accept new values and practices is not an easy task. But it does seem reasonable that prerequisites to adequate preparedness and response are public awareness and

understanding of the threatening condition and the means for mitigating the effects of the condition. The purpose of this study is to outline a plan of action by which a basic understanding of hurricanes could be systematically and routinely developed and maintained so that adequate preparedness and response actions are likely to follow.

It is assumed that the elementary and secondary schools provide the environment in which the above objective can be attained. It has therefore been proposed that an effort targeted at the Atlantic and Gulf coastal areas be undertaken to initiate school instruction for the purpose of improving public awareness and understanding of the hurricane threat. This proposal is based on the premise that successful disaster preparedness and response programs depend on the existence of an educated and aware public. It seems obvious, as the Windham et al study suggests, that an enlightened public is more likely to adequately face a disaster threat than an uninformed or poorly informed one. It appears logical that community disaster preparedness efforts are most likely to succeed when there is widespread awareness of the need and when there is broad democratic participation in program decision-making, development, implementation and ongoing operation. Finally, as Frank (Neil L. Frank, "The Hard Facts About Hurricanes," NOAA, Vol. 4, No. 3, July 1974) suggests, it is reasonable to expect that education plays an increasingly greater role in preparedness and response efforts as public experience with the specific hazard decreases. The lack of hurricane experience by most persons living in the Atlantic and Gulf coastal areas therefore calls for the development and implementation of widespread educational processes. Only when school instruction is made a significant part of the public hurricane education program is an aware and educated citizenry likely to evolve and be maintained.

General Project Objectives

The major purpose of this study is to lay the groundwork for (a) introducing hurricane education programs in Atlantic and Gulf coastal area schools, (b) attempting a determination of what impact, if any, school learning experiences have on individual, family and community

behavior in terms of hurricane preparedness and response, and (c) devising a model for the development and implementation of school instructional programs aimed at promoting adequate public preparedness and response for other specific natural hazards. The findings of the project are expected to lead to activity aimed at producing over the long term:

1. A greater public awareness and understanding of the nature of hurricanes and hurricane-related phenomena including fundamental scientific knowledge of their occurrence and their impacts on society;
2. An improvement in individual, family and community decision-making regarding hurricane preparedness and response, and;
3. A widespread and continuing awareness of the need to adequately prepare for hurricane and hurricane-related hazards.

Specific Project Objectives

Two decades of experience gained from numerous national curriculum projects supported by the National Science Foundation have shown that successful programs are broad comprehensive efforts. The development of quality curricular materials must be coupled with adequate marketing and implementation processes if there is to be reasonable expectation that the curricular materials will be widely accepted and used. Furthermore, such curriculum projects must be based on the realities of curricular, organizational, and economic constraints. In other words, the successful introduction of curriculum materials into schools requires careful planning.

Therefore, this project was directed towards efforts to (a) determine the present status of hurricane education in Atlantic and Gulf coastal schools, (b) identify ways to upgrade hurricane education in these states, and (c) outline a plan of action to develop and implement hurricane instruction materials in hurricane-threatened areas.

Information gathered and analyzed included:

1. Demographic data on student and teacher populations in the Atlantic and Gulf coastal states and in school districts located in potential hurricane landfall impact areas.

2. A state-by-state analysis of existing school hurricane education programs, including the grade levels in which these programs are taught and the quality of instructional materials available.

3. A state-by-state analysis of science, social science and civil defense curricula, a determination of how such curricula are evolved, and the identification of ways in which hurricane instructional materials could be incorporated into existing courses of study.

4. A state-by-state inventory of existing educational delivery systems and available equipment (educational television, closed circuit television, videotape players, individualized instruction equipment, film and slide projectors, science equipment, etc.) of potential use in hurricane instruction activity.

5. A state-by-state analysis of resources (financial, expert personnel, etc.) likely to be available for use or assistance in developing and implementing hurricane education program.

6. A state-by-state analysis of inservice teacher training practices, incentives and resources, including the identification of key training personnel.

7. A preliminary compilation of those fundamental scientific, preparedness and response facts, concepts and understandings about hurricanes and related phenomena which should be included in hurricane education materials.

8. A determination of practical and economical ways to produce and market hurricane instructional materials assuring widespread dissemination.

9. The development of evaluation processes to be used in curricular material development and in determining the impact of school hurricane education with the materials developed on individual, family and community hurricane preparedness and response behavior.

Based on these findings, a plan of action was written for the actual development and implementation of hurricane education programs in schools located in Atlantic and Gulf coastal areas. The plan provides recommendations for upgrading hurricane education based realistically on quantitative and educational information acquired in the project.

Limitations of the Study

1. This study was made during the time period April 1978 through November 1978.

2. The study emphasized the gathering of information from agencies and individuals in the Gulf and Atlantic coastal states involved directly in public elementary and secondary school education. Selected agencies known to be involved or interested in public hurricane awareness education were also contacted and persons interviewed as time and resources permitted.

3. Eighteen states, each with a multitude of potentially interested organizations, rendered an exhaustive study unrealistic.

Chapter II

PROCEDURE

Introduction

The Office of Disaster Preparedness, NWS, has for some time recognized the potentially significant role school-based instruction can play in developing adequate public disaster preparedness and response behavior. This recognition first led to the development of preparedness literature ("Owlie Skywarn" booklets, posters, etc.) targeted directly at the child and intended for school use. The experiences gained from this modest effort indicated that it is very likely schools could play important roles in laying the foundations for adequate public preparedness and response behavior if appropriate weather education materials were designed, disseminated and implemented.

The need exists to upgrade public knowledge about several major hazardous weather phenomena. However, the hurricane was identified as the major topic for initial efforts to develop, disseminate and implement school-based weather education materials in view of (a) the potential for major disasters resulting from hurricane landfalls in Gulf and Atlantic coastal areas, (b) the relatively limited geographical area which is threatened by the most devastating effects of hurricanes, and (c) budgetary constraints. It is intended that should the hurricane education program prove successful, it would be used as a prototype for the development of school-based instructional materials on other forms of hazardous weather.

Method of Study

This study was undertaken for the purpose of gathering enough information to formulate a plan of action which, if implemented, could be reasonably expected to introduce or upgrade hurricane awareness instruction in threatened coastal areas. Because of the inherent

complexities of dealing with eighteen independent state educational systems and numerous Federal, state and local governmental agencies, along with private efforts, no attempt was made to make an exhaustive study on the status of school-based hurricane education. Rather the focus was on school systems, their personnel, curricula and resources, and other organizations known to be involved or interested in school-based hurricane awareness education as a major objective. Primary attention was given to school systems and teachers as the success of any school-based hurricane education will ultimately be decided by them.

Data and information collected for this study were acquired by direct interview, survey by letter and telephone, and literature searches. Each coastal state from Texas to Maine was investigated. Statistical data were compiled from Federal and state publications and through personal communications with state education department personnel. The Council of State Science Supervisors (CSSS) membership was utilized in most cases to make direct contact with state school officials. CSSS members in all the eighteen states were contacted and most were interviewed directly or by telephone. Visitations were made to Texas, Louisiana, Mississippi, Florida, North Carolina, Virginia, Delaware and New York by the chief investigator. A consultant to the project made contacts and collected information in Alabama, Georgia and South Carolina. National Weather Service personnel in Texas, Florida (including NHC), North Carolina and Maryland were interviewed or contacted by the chief investigator as were persons associated with the Texas Hurricane Awareness Program, state-level Marine Advisory Service offices, the Office of Coastal Zone Management, civil defense offices, and the Insurance Information Institute.

The chief investigator, drawing on the information gathered and relying heavily on the recommendations of persons interviewed or contacted, and on his own professional experiences as a curriculum material developer and implementor, then proceeded to outline a plan of action. It should be noted that informal interview and survey techniques were used with open-ended questions to solicit as much information as respondents thought would be relevant and useful.

As data collection and interviewing progressed, suggestions and recommendations which came to light were included in subsequent interviews. The attempt was to let as many persons as possible react to findings to obtain their interpretations and recommendations.

Chapter III

FINDINGS

The development of a plan of action proposing the development and implementation of school-based hurricane education materials begins with an assessment of the current status of hurricane instruction. Also, those factors which are likely to have impact on actual development and implementation need to be identified and described. This chapter contains findings dealing with those factors thought to be especially pertinent to the task of formulating a realistic plan of action. Demographic data on teacher and student populations are presented and followed by a state-by-state review of relevant findings. Finally, a brief summary is given describing organizations which could become significant participants in school-based hurricane education activity.

A Demographic Overview

Student populations and numbers of schools in public school systems in the Gulf and Atlantic coastal states and coastal counties are summarized in Table I. Additional data, broken down to the coastal county local school district level, are presented in the Appendix, Herbert and Taylor's study (Paul J. Hebert and Glenn Taylor, Hurricane Experience Levels of Coastal County Populations - Texas to Maine, Community Preparedness Staff and Southern Region, National Weather Service, NOAA, July 1975) was used as the basis for identifying coastal counties. Williams and Warf (Jeffrey W. Williams and Sallie L. Warf, Education Directory, Public School Systems, 1976-77, National Center for Education Statistics, Education Division, Department of Health, Education and Welfare, U. S. Government Printing Office, Washington, D.C., 1977) was utilized to acquire student and school data.

The data show that in the 1976-77 school year there were approximately 18.5 million public school students (K-12) attending over

Table I
PUBLIC SCHOOL SYSTEMS, K-12
1976-77
Atlantic and Gulf Coastal States

		<u>Student Population</u>	<u>Number of Schools</u>
TEXAS:	Coastal County	716,154	1,020
	State Total	2,750,161	5,291
LOUISIANA:	Coastal County	282,158	441
	State Total	809,674	1,505
MISSISSIPPI:	Coastal County	59,533	103
	State Total	505,342	1,063
ALABAMA:	Coastal County	78,836	100
	State Total	751,669	1,370
FLORIDA:	Coastal County	1,182,740	1,449
	State Total	1,551,538	1,985
GEORGIA:	Coastal County	56,360	84
	State Total	1,068,854	1,770
SOUTH CAROLINA:	Coastal County	92,803	165
	State Total	601,513	1,103
NORTH CAROLINA:	Coastal County	93,327	164
	State Total	1,165,964	2,023
VIRGINIA:	Coastal County	304,761	434
	State Total	1,094,136	1,781
MARYLAND:	Coastal County	478,694	685
	State Total	870,974	1,352
DELAWARE:	Coastal County	125,906	198
	State Total	125,906	198
NEW JERSEY:	Coastal County	699,103	1,194
	State Total	1,429,517	2,444
NEW YORK:	Coastal County	1,868,898	1,967
	State Total	3,381,925	4,388
CONNECTICUT:	Coastal County	393,942	670
	State Total	640,255	1,116
RHODE ISLAND:	Coastal County	176,008	355
	State Total	176,008	355
MASSACHUSETTS:	Coastal County	598,233	1,184
	State Total	1,189,874	2,425

Table I (continued)

		<u>Student Population</u>		<u>Number of Schools</u>	
NEW HAMPSHIRE:	Coastal County	29,373		65	
	State Total		169,022		451
MAINE:	Coastal County	110,170		384	
	State Total		241,256		815
TOTAL:	COASTAL COUNTY	7,346,999		10,662	
	STATE TOTAL		18,523,588		31,435

From: Jeffrey W. Williams and Sallie L. Warf, Education Directory, Public School Systems, 1976-77, National Center for Education Statistics, Education Division, Department of Health, Education and Welfare, U.S. Government Printing Office, Washington, D.C., 1977.

31,400 schools in these coastal states. At the coastal county level, there were 7.3 million students in approximately 10,700 schools.

Table II shows, as reported in Foster and Carpenter (Betty J. Foster and Judi M. Carpenter, Statistics of Public and Elementary and Secondary Day Schools, Fall 1976, National Center for Education Statistics, Education Division, Department of Health, Education and Welfare, NCES 77-149, U.S. Government Printing Office, 1976, p. 38), the approximate numbers of teachers and pupil/teacher ratios. Using the student population for Massachusetts as reported in Table I and a 20-1 pupil/teacher ratio to arrive at an approximated teacher population of 59,500 in Massachusetts, it can be seen there were an estimated 943,000 teachers (K-12) in the Gulf and Atlantic coastal states.

An initial assumption of this study was that instructional units might be developed for specific grade levels. Consequently, data are presented in Table III for grades 2, 5 and 8 as representative of primary, intermediate and early secondary school levels. These data were reported in the Foster and Carpenter study for all the coastal states except Massachusetts. Assuming approximately 100,000 students and 5,000 teachers at each grade level in Massachusetts, it appears that in the neighborhood of 1.4 million students and 70,000 teachers were to be found at each elementary school grade level. It seems there were a significantly larger number of students and teachers at the early secondary level with about 1.55 million students and 78,000 teachers at each grade level.

Hurricanes pose the greatest threat to life and property in coastal areas subjected to the ravages of storm surges. An attempt was therefore made to determine the numbers of students and teachers of grades 2, 5 and 8 in coastal counties or coastal school districts. This required the use of statistical data obtained directly from state departments of education. Unfortunately, not all states report educational data suitable for such an analysis. Tables IV-XII show available data for nine Gulf and Atlantic coastal states. In the majority of tables, numbers of teachers were determined by using student enrollment figures and reported pupil/teacher ratios.

Table II
Pupil Membership and Teacher Data by State
Fall 1976

	<u>Total Enrollment</u>	<u>Classroom Teachers</u>	<u>Pupil/Teacher Ratio</u>
Alabama	752,507	37,259	20.2
Connecticut	635,000	36,299	17.5
Delaware	122,273	6,235	19.6
Florida	1,537,336	73,505	20.9
Georgia	1,095,142	46,451	23.6
Louisiana	839,499	40,428	20.8
Maine	248,822	13,230	18.8
Maryland	860,929	42,891	20.1
Massachusetts	- Not reported -		
Mississippi	510,209	24,130	21.1
New Hampshire	175,496	9,624	18.2
New Jersey	1,427,000	80,010	17.8
New York	3,378,997	178,480	18.9
North Carolina	1,191,316	52,906	22.5
Rhode Island	172,373	9,162	18.8
South Carolina	620,711	30,917	20.1
Texas	2,822,754	142,400	19.8
Virginia	1,100,723	59,538	18.5
Totals	17,491,087	883,465	

From: Betty J. Foster and Judi M. Carpenter, Statistics of Public Elementary and Secondary Day Schools, Fall 1976, National Center for Education Statistics, Education Division, U.S. Department of Health, Education and Welfare, NCES 77-149, U.S. Government Printing Office, 1978, p. 38.

Table III
Pupil Membership in Public Elementary and Secondary Schools
Grades 2, 5, and 8, by State
Fall 1976

	Pupil Teacher Ratio	Students	Teachers	Students	Teachers	Students	Teachers
Alabama	20.2	57,393	2,841	57,706	2,857	66,169	3,276
Connecticut	17.5	42,979	2,456	44,703	2,554	50,498	2,886
Delaware	19.6	7,793	398	7,917	404	9,620	497
Florida	20.9	108,931	5,212	113,085	5,411	132,424	6,335
Georgia	23.6	85,085	3,605	84,634	3,586	95,787	4,059
Louisiana	20.8	60,931	2,929	60,894	2,928	67,157	3,229
Maine	18.8	17,706	942	18,096	963	20,897	1,112
Maryland	20.1	51,050	2,540	54,730	2,723	72,467	3,605
Massachusetts		- Not Reported -					
Mississippi	21.1	41,312	1,958	40,491	1,919	45,852	2,173
New Hampshire	18.2	13,265	723	13,603	747	15,408	847
New Jersey	17.8	96,000	5,393	102,000	5,730	114,000	6,404
New York	18.9	239,730	12,684	242,127	12,811	262,619	13,895
North Carolina	22.5	88,326	3,926	87,740	3,900	100,955	4,487
Rhode Island	18.8	10,635	566	11,241	598	14,190	755
South Carolina	20.1	44,461	2,212	46,365	2,307	53,790	2,676
Texas	19.8	203,362	10,271	216,334	10,926	237,919	12,016
Virginia	18.5	83,287	4,502	79,875	4,318	93,262	5,041
Totals		1,252,245	63,158	1,281,541	64,682	1,453,014	73,294

From: Betty J. Foster and Judi M. Carpenter, Statistics of Public Elementary and Secondary Day Schools, Fall 1976 National Center for Education Statistics, Education Division, U.S. Department of Health, Education and Welfare, NCES 77-149, U.S. Government Printing Office, 1978, p. 38.

Table IV
Mississippi Coastal County
Student and Estimated Teacher Enrollments
in Grades 2, 5, 8, 1977-78

<u>Unit</u>	Grade 2		Grade 5		Grade 8	
	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>
Hancock County	170	8	158	7	116	5
Bay St. Louis	165	8	148	7	186	9
Harrison County	890	42	826	39	833	39
Biloxi	615	29	503	24	611	29
Gulfport	588	28	532	25	652	31
Long Beach	301	14	260	12	347	16
Pass Christian	96	5	122	6	142	7
Jackson County	522	25	540	26	595	28
Moss Point	590	28	576	27	596	28
Ocean Springs	336	16	298	14	392	19
Pascagoula	<u>826</u>	<u>39</u>	<u>711</u>	<u>34</u>	<u>770</u>	<u>36</u>
Totals	5,099	242	4,674	221	5,240	247

From: Public School Enrollment (End of First Month), 1977-1978, Division of Administration and Finance, Mississippi Department of Education, Jackson, Mississippi.

Note: Pupil/teacher ratio of 21.1:1 reported in Foster and Carpenter, Statistics of Public Elementary and Secondary Schools, Fall 1976 used to calculate approximate numbers of teachers.

Table V
Alabama Coastal County Student
and Estimated Teacher Enrollments
in Grades 2, 5, and 8, 1977-78

	Grade 2		Grade 5		Grade 8	
	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>
Baldwin County	1,279	63	1,185	59	1,502	74
Mobile County	<u>4,981</u>	<u>247</u>	<u>5,942</u>	<u>294</u>	<u>6,443</u>	<u>319</u>
Totals	6,260	310	7,127	353	7,945	393

From: Direct correspondence with school systems.

Note: Pupil/teacher ratio of 20.2:1 reported in Foster and Carpenter,
Statistics of Public Elementary and Secondary Schools, Fall, 1976
used to calculate approximate numbers of teachers.

Table VI
Florida Coastal County Enrollments
and Estimated Numbers of Teachers
in Grades 2, 5, and 8, Fall 1977

County	Grade 2		Grade 5		Grade 8	
	Students	Teachers	Students	Teachers	Students	Teachers
Bay	1,530	69	1,332	60	1,797	81
Brevard	3,373	153	3,300	149	4,593	208
Broward	10,390	470	10,165	460	11,647	527
Charlotte	360	16	356	16	674	30
Citrus	488	22	486	22	627	28
Collier	1,039	47	925	42	1,139	52
Dade	16,756	758	17,533	793	21,615	978
Dixie	136	6	117	5	172	8
Duval	9,094	411	7,354	333	9,453	428
Escambia	3,383	153	3,236	146	3,987	180
Flagler	143	6	132	6	144	7
Franklin	143	6	106	5	184	8
Glades	99	4	96	4	106	5
Gulf	194	9	198	9	241	11
Hendry	362	16	344	16	356	16
Hernando	461	21	458	21	512	23
Hillsborough	8,909	403	8,010	362	9,777	442
Indian River	625	28	601	27	809	37
Jefferson	181	8	181	8	195	9
Lee	2,177	99	1,987	90	2,549	115
Levy	275	12	269	12	368	17
Manatee	1,676	76	1,377	62	1,677	76
Martin	663	30	556	25	712	32
Monroe	681	31	581	26	769	35
Nassau	578	26	543	25	688	31
Okaloosa	1,813	82	1,631	74	2,255	102
Okeechobee	346	16	293	13	377	17
Palm Beach	5,248	237	5,012	227	6,127	277
Pasco	1,674	76	1,719	78	2,048	93
Pinellas	6,852	310	6,446	292	7,939	359
Saint Johns	631	29	597	27	700	32
Saint Lucie	1,090	49	956	43	1,081	49
Santa Rosa	877	40	842	38	1,103	50
Sarasota	1,773	80	1,686	76	2,006	91
Taylor	251	11	298	13	297	13
Volusia	2,661	120	2,472	112	3,168	143
Wakulla	181	8	174	8	204	9
Walton	284	13	256	12	352	16
Total	87,397	3,941	82,625	3,737	102,448	4,635

From: Pupils by Race/Ethnic Group, Staff by Sex and Race/Ethnic Group, 1977-1978, Department of Education, State of Florida.

Note: Estimated numbers of teachers based on 22.1:1 ratio determined by total classrooms in state K-12 divided into total K-12 unweighted enrollment.

Table VII
 South Carolina Coastal County Public Student
 Enrollment and Estimated Numbers of Teachers,
 Grades 2, 5, and 8, 1977-78

<u>Unit</u>	<u>Grade 2</u>		<u>Grade 5</u>		<u>Grade 8</u>		<u>Student- Faculty Ratio</u>
	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>	
Beaufort County	636	34	605	32	880	47	18.9
Charleston County	3,707	186	3,594	181	4,238	213	19.9
Georgetown County	749	39	686	36	835	43	19.3
Horry County	1,483	69	1,415	66	1,609	75	21.5
Colleton County	428	22	447	23	573	30	19.3
Totals	7,003	350	6,747	338	8,135	408	

From: Data based information provided by Office of Research, Department of Education,
 State of South Carolina.

Table VIII
Virginia Coastal County Student Enrollments and
Estimated Numbers of Teachers, Grades 2, 5, and 8,
1977-78

<u>School District</u>	Elementary	<u>Grade 2</u>		<u>Grade 5</u>		Secondary	<u>Grade 8</u>	
	<u>Student/Teacher</u> <u>Ratio</u>	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>	<u>Student/Teacher</u> <u>Ratio</u>	<u>Students</u>	<u>Teachers</u>
Accomack								
County	23.45	460	20	440	19	16.12	487	30
Gloucester								
County	22.38	279	13	263	12	16.81	321	19
Isle of Wight								
County	18.46	354	19	335	18	18.57	462	25
Lancaster								
County	19.85	105	5	133	7	19.51	181	9
Mathews								
County	19.87	102	5	104	5	16.45	138	8
Middlesex								
County	17.29	86	5	92	5	16.75	179	11
Northhampton								
County	19.12	195	10	192	10	16.43	271	16
Northumberland								
County	18.87	110	6	120	6	15.16	185	12
Richmond								
County	17.50	106	6	98	6	17.49	132	8
Surry								
County	14.54	105	7	91	6	14.28	175	12
Westmoreland								
County	19.04	173	9	200	11	18.63	180	10
York								
County	23.23	740	32	693	30	17.25	780	45
Chesapeake								
City	23.27	2,132	92	1,836	79	19.09	2,347	123
Hampton								
City	22.10	2,088	94	1,838	83	17.24	2,516	146
Newport News								
City	22.06	2,508	114	1,979	90	19.15	2,403	125

Table VIII (continued)

<u>School District</u>	Elementary	Grade 2		Grade 5		Secondary	Grade 8	
	Student/Teacher <u>Ratio</u>	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>	Student/Teacher <u>Ratio</u>	<u>Students</u>	<u>Teachers</u>
Norfolk								
City	20.88	3,757	180	3,127	150	16.75	3,626	216
Poquoson								
City	19.85	160	8	143	7	25.14	217	9
Portsmouth								
City	21.40	1,742	81	1,468	69	16.98	1,837	108
Suffolk								
City	20.37	812	40	701	34	18.77	1,109	59
Virginia Beach								
City	23.56	4,567	194	3,851	163	20.01	4,906	245
Williamsburg City & James City County	18.36	388	21	367	20	17.21	484	28
Coastal Total		20,969	961	18,071	830		22,936	1,264

From: 1977-78 Fall Membership - Division Summary, copy of Computer print-out, supplied by
 Howell L. Grumer, Supervisor of Statistical Services.

Table IX

Maryland Coastal County Public School
Student Enrollment and Estimated Numbers
of Teachers, Grades 2, 5, and 8, 1977

Unit	Grade 2		Grade 5		Grade 8	
	Students	Teachers	Students	Teachers	Students	Teachers
Anne Arundel	4,558	228	4,629	230	6,553	326
Baltimore City	9,135	454	9,415	468	11,640	579
Baltimore County	3,956	197	4,434	221	9,845	490
Calvert County	537	27	547	27	647	32
Caroline County	384	19	369	18	442	22
Cecil County	1,034	51	935	47	1,168	58
Dorchester County	435	22	415	21	557	28
Harford	2,591	129	2,530	126	2,966	148
Kent	200	10	225	11	284	14
Queen Anne's	235	12	354	18	434	22
Somerset	39	2	297	15	370	18
St. Mary's	909	45	842	42	1,017	51
Talbot	120	6	62	3	415	21
Wicomico	947	47	951	47	1,137	57
Worcester	389	19	457	23	558	28
Totals	25,469	1,268	26,462	1,317	38,033	1,894

From: Statistics of Enrollment and Number of Schools Public and Non-Public: September 30, 1977, State of Maryland - Maryland State Department of Education, 1978.

Note: Numbers of teachers calculation based on 20.1 pupil-teacher ratio found in Foster and Carpenter, Statistics of Public Elementary and Secondary Day Schools, Fall 1976.

Table X
 Delaware Coastal Count Public School Student
 Enrollment and Estimated Numbers of Teachers,
 Grades 2, 5, and 8, 1977

Unit	Grade 2		Grade 5		Grade 8	
	Students	Teachers	Students	Teachers	Students	Teachers
Kent County	1,657	85	1,600	82	1,960	100
New Castle County	4,904	250	5,060	258	6,042	308
Sussex County	1,232	63	1,257	64	1,618	83
Total	7,793	398	7,917	404	9,620	491

From: Delaware Department of Public Instruction Documents.

Note: Numbers of teachers calculation based on 19.6 pupil/teacher ratio found in Foster and Carpenter, Statistics of Public Elementary and Secondary Day Schools, Fall 1976.

Table XI
New York State Coastal Areas Public School Enrollments
and Estimated Numbers of Teachers, Grades 2, 5, and 8,
Fall 1976

<u>Unit</u>	<u>Grade 2</u>		<u>Grade 5</u>		<u>Grade 8</u>	
	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>
New York City	78,326	4,144	77,433	4,096	75,893	4,015
Nassau County	16,578	877	18,765	992	22,479	1,189
Suffolk County	23,706	1,254	24,826	1,313	27,098	1,433
Westchester County	10,600	560	11,083	586	12,718	672
Totals	129,210	6,835	132,107	6,987	138,188	7,309

From: Survey of Enrollment, Staff and Schoolhousing, Fall 1976, The State Education Department, Albany, New York.

Note: Pupil/Teacher ratio of 18.9 taken from Foster and Carpenter, Statistics of Public Elementary and Secondary Day Schools, Fall 1976.

Table XII

New Hampshire Coastal Public School Student
Enrollment and Estimated Numbers of Teachers,
Grades 2, 5, and 8, 1977-78

<u>Unit</u>	Grade 2		Grade 5		Grade 8	
	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>
Hampton	158	6	140	5	149	6
Hampton Falls	19	1	17	1	26	1
Newington	10	1	10	1	0	0
North Hampton	53	3	55	3	68	4
Portsmouth	423	17	329	13	394	16
Rye	65	3	67	4	78	4
Totals	728	31	618	17	715	31

From: General Fall Reports submitted by schools to New Hampshire Department of Education. Received from Division of Education.

Rhode Island reported coastal school district enrollments and numbers of students for all public elementary and secondary grades combined. These data are shown in Table XIII.

In recognition of the fact that not all elementary and secondary students attend public schools, an effort was made to determine the numbers of non-public schools and their enrollments in coastal states and/or counties. Such data were not readily available as many states do not compile and report such information. Tables XIV-XIX are presented for those states from which data were acquired. It is thought Louisiana probably had the largest proportion of its elementary and secondary students enrolled in non-public schools.

State Educational Systems, Curricula and Resources

Each Gulf and Atlantic coastal state was examined in the attempt to determine the organizational structure of its educational system, school curricula and how they are determined, the present status of school hurricane education activity, the extent of instructional resources, factors relating to teacher training and curricular implementation, and other information which might be of significance in upgrading hurricane instruction. Much of the information gathered was from state education department personnel, from persons identified by state education department personnel and from others known to be actively involved in some form of hurricane awareness activity. As stated earlier, the focus of the assessment study was on the educational systems of the various states as it is assumed they hold the keys to successful hurricane curriculum innovation and implementation.

Texas:

Texas possesses a three-tiered educational system consisting of local school districts, regional education service centers and the Texas Education Agency. The State, through the Texas Education Agency, establishes broad curricular guidelines and requirements. A unique aspect of the Texas education system is the regional education service center. Each service center assists its member school districts in

Table XIII
 Rhode Island Coastal School District
 K-12 Student Enrollments (Fall 1977)
 Numbers of Teachers (1976-77)

<u>County</u>	<u>Coastal School District</u>	<u>Fall 1977 Enrollment</u>	<u>1976-77 F.T.E. Classroom Teachers</u>
Bristol:	Barrington	3,766	237.5
	Bristol	3,328	180.3
	Warren	1,833	108.0
Kent:	East Greenwich	2,539	157.0
	Warwick	17,124	1,020.0
Newport:	Jamestown	509	27.2
	Little Compton	458	24.0
	Mittletown	3,574	189.6
	Newport	5,182	310.0
	Portsmouth	3,347	186.5
	Tiverton	2,824	164.8
Providence:	Cranston	12,718	741.8
	East Providence	9,177	470.0
	Pawtucket	10,391	604.0
	Providence	19,493	1,130.0
Washington:	Charlestown	440	23.2
	Narragansett	1,732	91.9
	New Shoreham (Block Island)	101	9.7
	North Kingstown	5,206	273.4
	South Kingstown	2,840	170.5
	Westerly	3,881	201.4
	Chariho Regional	1,874	98.0
		<u>112,337</u>	<u>6,410.8</u>

From: Personal Communication from Danley R. Taft, Educational Statistics,
 Department of Education, State of Rhode Island and Providence
 Plantations, June 22, 1978.

Table XIV
Louisiana Coastal Parish Public and Non-Public
School Enrollments and Numbers of Schools
1976-77, Grades K-12

<u>Parish</u>	<u>Public</u>		<u>Non-public</u>	
	<u>Students</u>	<u>Schools</u>	<u>Students</u>	<u>Schools</u>
Cameron	2,219	7	-	-
Iberia	16,543	28	1,989	5
Jefferson	72,300	82	30,339	65
Lafourche	19,488	31	2,498	7
Orleans	95,794	145	40,198	118
Plaquemines	5,664	8	2,262	5
St. Bernard	12,513	17	2,201	5
St. Mary	15,382	32	2,618	9
St. Tammany	20,664	33	3,229	13
Terrebonne	23,189	41	2,907	11
Vermillion	10,151	21	1,180	4
Coastal Parish				
Total (11)	293,907	445	89,421	242

From: Louisiana School Directory, 1977-1978, Bulletin 1462,
State Department of Public Education, Baton Rouge,
Louisiana.

Table XV
Florida Coastal County Public and Non-Public
School Enrollments and Numbers of Schools
1976-77, Grades K-12

Name of Unit	Public		Non-Public	
	Student Population	Schools	Student Population	Schools
Bay County	19,905	29	1,184	7
Brevard County	54,325	71	3,059	20
Broward County	138,626	146	21,624	100
Charlotte County	5,826	10	282	3
Citrus County	6,669	13	96	3
Collier County	12,660	21	518	4
Dade County	244,805	245	39,643	189
Dixie County	1,686	3	-	-
Duval County	111,490	138	16,254	58
Escambia County	47,985	66	6,254	27
Flagler County	1,471	2	-	-
Franklin County	1,863	4	39	1
Glades County	1,197	2	-	-
Gulf County	2,644	5	28	1
Hendry County	4,154	7	-	-
Hernando County	5,595	8	220	3
Hillsborough County	116,554	134	14,504	68
Indian River County	8,933	14	813	5
Jefferson County	2,481	3	387	1
Lee County	27,826	40	2,105	13
Levy County	4,043	8	51	1
Manatee County	19,853	29	1,528	9
Martin County	8,039	11	856	6
Monroe County	9,565	15	862	9
Nassau County	7,420	12	116	1
Okaloosa County	26,545	36	408	4
Okeechobee	4,140	5	28	2
Palm Beach County	70,926	85	13,911	68
Pasco County	21,631	24	482	4
Pinellas County	92,078	113	12,286	54
Saint Johns County	7,532	16	834	5
Saint Lucie County	12,564	14	2,118	11
Santa Rosa County	12,163	22	411	2
Sarasota County	23,475	23	1,958	14
Taylor County	3,816	7	-	-
Volusia County	36,052	54	2,972	23
Wakulla County	2,311	4	-	-
Walton County	3,892	10	87	1
Coastal Total	1,182,740	1,449	145,918	717

From: Public School data from Williams and Warf, Education Directory,
Public School Systems 1976-77. Non-Public School data from
Profiles of Florida School Districts, 1976-77, Profile VII,
Vol. II, Department of Education, State of Florida.

Table XVI
 Maryland Coastal County
 Non-Public School Systems
 September 1977

<u>County or City</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
Anne Arundel County	Pre K-12	7,952	47
Baltimore City	"	26,722	101
Baltimore County	"	25,756	124
Calvert County	"	644	5
Caroline County	"	145	3
Cecil County	"	1,609	13
Dorchester County	"	396	4
Harford County	"	2,877	14
Kent County	"	170	2
Queen Anne's County	"	193	3
Somerset County	"	67	3
St. Mary's County	"	2,505	15
Talbot County	"	882	4
Wicemoco County	"	748	8
Worcester County	"	343	3
Totals		71,009	349

From: Statistics on Enrollment and Number of Schools Public and Nonpublic: September 30, 1977, State of Maryland, Maryland State Department of Education, Baltimore, Maryland, April 1978.

Table XVII
 Delaware Coastal County Student Enrollments and
 Estimated Numbers of Teachers in Public and
 Non-Public Schools, Grades 2, 5, and 8, 1977

	<u>Grade 2</u>		<u>Grade 5</u>		<u>Grade 8</u>	
	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>	<u>Students</u>	<u>Teachers</u>
Public	7,793	398	7,917	404	9,620	491
Non-Public	<u>1,588</u>	<u>88</u>	<u>1,659</u>	<u>93</u>	<u>1,621</u>	<u>91</u>
Total	9,381	486	9,576	497	11,241	582

From: Student data source was Delaware Department of Public Instruction documents.

Note: Estimates of non-public school teachers based on total K-12 enrollments divided by total numbers of teachers giving a pupil/teacher ratio of 17.9. Public school teacher estimates based on 19.6 pupil/teacher ratio reported in Foster and Carpenter, Statistics of Public Elementary and Secondary Day Schools, Fall 1976.

Table XVIII
New York Public and Non-public
School Enrollments, 1975-76

	<u>Total</u>
Public (statewide)	3,382,369
Non-public (statewide)	621,345
New York City Public	340,827
New York City Non-public	1,096,460

From: Annual Educational Summary Nineteen
Seventy-Five--Seventy-Six, The State
Education Department, Albany, N.Y.

Table XIX
Connecticut Statewide Public and Non-Public
School Enrollments 1976, Grades 2, 5, and 8

	Grade 2		Grade 5		Grade 8	
	Students	Teachers	Students	Teachers	Students	Teachers
Public	42,979	2,455	44,703	2,544	50,498	2,885
Non-public	4,050	N.A.	5,933	N.A.	7,848	N.A.
Total	48,029		50,636		58,346	

From: Enrollment data from Digest of Education Statistics 1977, Department of Education, State of Connecticut, December 1977. Pupil/faculty ratio of 17.5 from Foster and Carpenter, Statistics of Public Elementary and Secondary Day Schools, Fall 1976.

a variety of ways including the development, introduction and implementation of innovative programs. Texas Education Agency subject matter specialists also work with teachers, school districts and regional education centers as appropriate to implement new instructional materials.

The only known instruction dealing with hurricanes in Texas schools is based on information found in conventional textbooks. No civil defense course or unit is taught throughout the state. Along with typical offerings in social studies, most junior high schools offer an eighth grade earth science course. Schools have been used in some coastal areas to disseminate Hurricane Awareness Program leaflets.

The schools of Texas are generally well-equipped with conventional audiovisual equipment, i.e., 16-mm. motion picture projectors, and slide and filmstrip projectors. Many schools have videotape players but they are of many different configurations.

Funds for the purchase of instructional materials are available in modest amounts with decisions concerning purchases being made at the local school level. Expert personnel are generally available in the regional service centers and in the Texas Education Agency to assist in the implementation of curricular materials. Such persons have indicated interest and willingness to participate in hurricane education activity.

Teachers are required to complete ten days of inservice training each year. Typically, such training is conducted through colleges and universities although Texas Education Agency personnel do conduct inservice training programs when funds are provided. Schools sometimes will pay teachers extra compensation for inservice training participation and they may offer salary increment incentives. Teachers often voluntarily undertake training on their own to upgrade their teaching.

The Hurricane Awareness Program of the Texas Coastal and Marine Council and cooperating organizations is probably the best adult hurricane education effort in the United States. It has played a vital role in the development and implementation of hurricane awareness and preparedness materials based on local coastal environments. It is also a

model for the drawing together of public and private organizations and groups to provide expertise and resources. An important component of the Hurricane Preparedness Program is the role played by the private Texas Catastrophe Property Insurance Association through its Texas Insurance Information Center. The Association has made a substantial contribution through the development and dissemination of media materials and brochures.

The Texas Sea Grant program has been active in the preparation of background informational materials on Texas hurricanes (Hurricanes on the Texas Coast, Texas A & M University, 1975). Its Marine Advisory Services Program has become a partner in the Hurricane Awareness Program. The Southern Region National Weather Service office has been promoting hurricane educational activity in the state and has indicated a willingness to cooperate in school-based educational efforts.

Texas is one of several states in which there is a need for the development of bilingual curricular materials. The Hurricane Awareness Program has already initiated efforts in this regard through the preparation of at least one brochure in Spanish.

Through the efforts of organizations mentioned earlier, there exists in Texas much of the "raw" material needed for the development of locally oriented hurricane instructional materials.

Louisiana:

The State of Louisiana has a centralized public school system in which the Department of Education exerts considerable control through mandating courses and the amount of instructional time to be spent in each subject matter area. The relatively large number of non-public schools in the state follow these guidelines to assure proper accreditation.

There is no known school-based instruction on hurricane topics in Louisiana excepting materials found in conventional textbooks. There is no required civil defense instruction in the schools. Science instruction is mandated by the state at the elementary school level and a one-half year earth science course is typically taught at the

eighth grade level.

Instructional television is in the developmental stage in Louisiana. Schools are required to have basic conventional audiovisual equipment and many apparently have adequately equipped media centers.

Most instructional materials are purchased with State funds and must be selected from an approved list which is updated every four years. Some local money is available for the purchase of non-approved materials if, in the opinion of the local school districts, such materials are needed and worthwhile. In most cases, teachers initiate the decision-making process regarding the purchase of materials.

Teachers are required to take two days of inservice training each year and must earn a minimum of six graduate credit hours every five years to remain certified.

While there are substantial numbers of non-public schools in Louisiana, the implementation of new curricular materials in these schools is promoted by the participation of their teachers in training activities conducted by State Education Department specialists. The State Science Consultant has indicated a willingness to cooperate in the implementation of hurricane education materials.

Mississippi:

The State Education Department exerts some centralized control over Mississippi schools through the establishment of curricular guidelines and accreditation standards. The State recommends time to be spent on particular subjects, and in the case of civil defense, it has required that a unit consisting of 8 to 12 hours of instruction be presented (typically at the sixth and ninth grade levels).

Some hurricane instruction does take place in Mississippi schools. The required civil defense instruction includes hurricanes, and an educational television series entitled Weather Matrix includes programs "Weather on a Rampage" and "Watches and Warnings" which treat hurricanes. While not mandated, the State Department of Education provides an elementary school science guide and recommends an Earth-Space Science course at the junior high school level.

The Mississippi educational television network is well developed and is equipped to flash warnings issued by the National Weather Service. Every school must have a up-to-date disaster plan for emergencies caused by natural or man-made disasters.

The State Education Department has had valuable experience in the development and implementation of its civil defense instructional units. One-day training sessions were held, and procedures for printing and distributing brochures (including the "Owlie Skywarn" booklets" were devised and implemented. However, the civil defense education program is no longer funded and has ceased to exist as a function of the State Education Department.

Alabama:

Alabama has been one of the more active states in school-based instruction in the area of disaster preparedness. The eighth grade Social Studies course of study requires the inclusion of disaster preparedness as outlined in publications entitled The Challenge of Survival and The Challenge of Survival, Teacher's Guide developed in a national pilot for the Defense Civil Preparedness Agency. Fifth and sixth grade teachers in the State are supplied "Owlie Skywarn" booklets on hurricanes and tornadoes. Films such as "A Hurricane Called Camille" are made available to schools and are shown from time to time on state-wide educational television both during the school day and after school.

The student's The Challenge of Survival includes a section on hurricanes (pp. 17-27) which mentions storm surge, fresh water flooding, watches and warnings, and hurricane safety rules. The publication is of high quality but individual topics are necessarily brief as an encyclopedic approach is taken to cover pollution, energy problems, and crime as well as natural and man-made disasters.

Statewide educational television shows programs from the What on Earth series ("Cyclones and Anticyclones") and from the Weather Matrix series ("Watches and Warnings"). However, statistical data for the 1977-78 school year suggest that a relatively small proportion of

the junior high school population to whom these programs are directed actually view them.

It does appear that Alabama has been quite active in school-based preparedness education in association with State and county civil defense groups.

Florida:

Florida possesses a school organization based on local school district autonomy. The State does not require any specific courses to be taught in its elementary and secondary schools. Curricular decisions are left entirely to the local school districts. The only State control of schools is through the use of competency examinations which students must pass in order to graduate from high school.

The only known instruction dealing with hurricanes is that which is included in conventional textbooks. There are no known civil defense courses or units taught.

The State allocates funds for instructional materials on a per capita student basis. Decisions regarding the purchase of curricular materials are the responsibilities of principals although teachers often participate by making recommendations. The implementation of new curricular materials are assisted by district-level subject matter supervisors (where they exist) and/or through the cooperation of State Education Department consultants.

Florida's schools are generally well-equipped with conventional audiovisual equipment and about one-half have videotape recorders.

Each local school board in the State of Florida is required to conduct an educational training program for its teachers. A sum of \$5 per student is set aside each year to conduct inservice teacher education. Such activity is conducted by individual school districts and teacher education centers at universities, colleges, and selected community colleges.

Groundwork for school-based hurricane education has been laid in the State of Florida. National Hurricane Center staff have developed a preliminary instructional unit as has a group working with

State Department of Education personnel. An active Marine Advisory Service has also been investigating ways of promoting hurricane education.

The presence of the National Hurricane Center, the Marine Advisory Service and interested science supervisors in the State Department of Education provides a sound basis for hurricane education material development in the State of Florida.

Georgia:

The State of Georgia has a decentralized school system in which practically all decisions are made at the local level. There are general State mandates on subjects to be taught but otherwise local school districts determine curriculum matters. State Department of Education personnel interact with schools on consultant bases only. Georgia has a State-approved textbook list. If they wish, schools may purchase, with local funds, books not on the list.

There is no known special hurricane instruction going on in Georgia. Social studies and science are taught in the elementary and early secondary schools. Typically earth science is taught at the eighth grade level. There are no known courses or units on civil defense. Some hurricane preparedness activity as part of school safety occurs in coastal Chatham County. The Director of Security for the county meets periodically with principals concerning severe weather procedures. Some principals are designated as shelter commanders for both hurricanes and tornadoes. A printed handout is used to advise teachers of emergency procedures. Chatham County is attempting to start some instruction at the middle school level concerning natural disasters. They intend to use the Your Chance to Live materials by the Defense Civil Preparedness Agency.

There is state-wide educational television in Georgia but the extent of its use varies considerably throughout the state. Schools do have available to their teachers all the conventional audiovisual equipment.

The purchase of curricular materials is made at the local school

level with decisions typically being made by the teacher, media specialist or curriculum committee. While funds are not plentiful, they appear to be sufficient to purchase limited quantities of instructional materials.

Staff development is mandatory. College credit or equivalent inservice staff development credit in approved programs can be used to meet the requirements.

South Carolina:

South Carolina's State Department of Education works with county school districts to carry out elementary and secondary instruction. Textbooks are provided by the State from an approved list. Counties do have the option of buying texts with county funds.

Existing school curricula in grades 1 through 6 include weather topics as do life/earth science courses at the seventh and eighth grade levels. Apparently, the only hurricane instruction in the schools of South Carolina is that which is part of conventional texts or films or through civil defense activity.

The South Carolina Disaster Preparedness Agency has been active. In each of the 46 counties there is a Disaster Preparedness Contact School Director who visits schools and talks to students about severe weather, its effects and how to cope with it. The Your Chance to Live film series is directed towards the middle school level. All schools are required to have information on severe weather posted and must have drills for evacuating buildings or finding the best protected area.

South Carolina has the reputation for having one of the best educational television systems in the country. The ratio of one television receiver to every 2.84 classrooms (1977-78) reflects the high degree of development. Educational television broadcasts weather conditions in open and closed circuit. It has a direct line from the Disaster Preparedness Agency Command Center which is used in instances of severe weather conditions for warnings and preparedness messages. Educational television has also been involved in proposing the purchase and installment of NOAA Weather Radio receivers in schools. No action

has been taken on this proposal due to the lack of funds.

Inservice teacher training is carried out through the colleges, universities, the Department of Education, local school districts, and private contractors. Typical incentives are the earning of college credit and certificates.

North Carolina:

North Carolina has a centralized educational system headed by the State Department of Public Instruction. The State is divided into eight regions; each of which maintains a regional office which includes subject matter consultants. Weather topics are generally taught in grades K-6 as part of science instruction. Earth science is widely taught by about 900 teachers at the eighth grade level with current enrollments of about 100,000 students. Many earth science students receive some instruction on hurricanes as part of the televised What on Earth series which was developed in North Carolina. North Carolina does not have a required civil defense course or unit. However, State civil defense personnel are developing a K-12 instructional program under Defense Civil Preparedness Agency funding which will include some treatment of hurricanes.

North Carolina's educational television system is one of the better developed systems in the country. Approximately 85% of the schools have access to educational television. A large portion of the coastal areas is not covered by educational television at the present time, but it is expected the entire coast will receive educational television signals in the near future.

Because of the centralized organization of North Carolina's educational system, the implementation of hurricane education materials is likely to be most successful by working directly with the State Superintendent and the State Board of Public Instruction. Cooperation with various agencies within the State seems very likely.

Virginia:

The public school system of Virginia is organized on the basis of local school autonomy. The State Education Department is primarily

advisory in its functions but is assuming an increasingly regulatory role through the accreditation process. There are State textbook adoptions but they are mainly for screening purposes as schools may go outside the list with justification. There is State financing of schools.

There is no known instruction on hurricanes except that based on material appearing in conventional textbooks. There is no known civil defense course or unit requirement. Science is taught in most elementary school classrooms and in 1977-78 approximately 58% of all ninth grades were taking an earth science course.

The schools of Virginia are serviced by five educational television stations which operate independently in terms of programming. One dollar per year per student must be spent on instructional television equipment. Most schools possess videotape players. All are equipped with conventional audiovisual equipment.

Decisions concerning the purchase of instructional materials is made at the local level. The current budget constraints in Virginia are such that to implement a new program, instructional materials might have to be supplied with outside funds.

Teachers must undergo training for recertification purposes. This training is partially accomplished through State Education Department consultants and science education centers located at local universities and colleges. An effective dissemination network has evolved in Virginia for elementary and early secondary science through State Education Department science consultants.

Maryland:

Maryland's public school systems operate primarily by local decision with some minimum standards imposed by the State. The major role of the State Education Department in curricula is one of leadership.

There is no known special instruction on hurricanes in Maryland's schools. Weather units are taught at the elementary level and in ninth grade earth science. There is no required civil defense instruction.

All schools are equipped with educational television and have

conventional audiovisual equipment.

The purchase of instructional materials is made at the local level. Limited funds are typically available for worthwhile purchases.

Delaware:

School districts in Delaware have local autonomy with their boards of education determining curricula. There are some State-mandated high school graduation requirements such as one unit of science and three of social studies. The State Department of Public Instruction does recommend courses of study and time to be spent on instruction at all levels as suggested guidelines. There is no State textbook selection process. The primary functions of the State Department of Public Instruction are to provide leadership and service. State science supervisors spend about one-half time working directly with local school districts. There is some interaction between the State Department of Public Instruction and private schools.

→ There is no known special instruction on hurricanes taking place in the schools. However, there has been limited distribution of printed information on hurricanes to teachers.

Educational television does not cover the entire State of Delaware nor is it widely used. All schools do own conventional audiovisual equipment.

The Department of Public Instruction has no funds budgeted to purchase and implement instructional materials. Ordinarily, purchases are made at the local level with decisions being made by elementary school principals and secondary department heads.

Teachers must renew their certificates every ten years. Each school district is permitted five inservice training days at State expense each year. Incentives for taking part in inservice training includes the meeting of re-certification requirements and the application of study credits towards salary increases. Some schools offer stipends to teachers for after-school involvement in training activities. Qualified groups can offer inservice credit at the rate of fifteen instructional hours per inservice credit hour.

New Jersey:

The organizational structure of the New Jersey educational system is one of local board of education rule balanced by State rules and regulations. Currently, there are very few State curricular requirements but the trend is towards an emphasis on the "basics". Twenty-one county offices of the State Department of Education are being strengthened to monitor local schools.

There is no known special hurricane instruction in New Jersey schools. However, "Owlie Skywarn" booklets have been distributed in the State. About two years ago, civil defense instructional efforts ceased in New Jersey. Because of the return to "basics" trend, content areas such as science are presently given low priority with little curriculum development and implementation taking place.

There are four public television channels in New Jersey which apparently receive only scattered use in the schools. All the schools own conventional audiovisual equipment.

The initial decision on purchases of instructional materials is made at the local level. These determinations are subject to review by the county offices of the State Department of Education.

Inservice teacher training is conducted at the local level with State approval. It appears that the county offices of the State Department of Education play a major role in teacher training and curriculum implementation.

New York:

In New York education is the responsibility of the State. The State mandates what subject matter areas are to be taught and at what levels but the details are largely left to the local school districts. Three units of social studies and one of science are required for high school graduation. A Regents diploma has somewhat more stringent requirements. New York is a non-textbook adoption state.

There is no special hurricane instruction going on in the schools of New York State. The State Education Department is, however, including disaster preparedness concepts in its list of basic competencies ←

students should have to graduate. Students must take examinations based on these competencies.

Science and social studies must be taught in the elementary schools but the amount of instructional time to be devoted to the subject is not mandated. Science and social studies are also required at the early secondary level. Typically, most students take earth science or physical science including weather units in the eighth or ninth grade.

New York has educational television but its use is far from universal in the schools. Numerous schools have videotape players and schools often maintain videotape libraries. A unique program exists in the State Education Department called G.I.F.T. (Governmental and Industrial Films for Teachers). Permission has been received to tape certain films so that teachers providing blank videotapes can receive copies for their school's use.

Local school districts make decisions concerning the purchase of instructional materials with teachers typically initiating requests. Printed materials exclusive of workbooks can be published with relatively plentiful State funds. Other instructional materials are purchased with local funds which frequently are limited.

The intent of the State Education Department to include preparedness understandings and basic competencies which help citizens to take proper courses of action could provide a major impetus for implementing hurricane education materials in New York.

Inservice teacher training in New York State takes place in a variety of settings in which teachers earn academic or inservice credits approved by their local school boards. Salary increments, certification requirements, and the desire of the teacher to improve professionally are major incentives for undertaking inservice training.

State science education consultants have indicated a willingness to cooperate in hurricane education implementation activity.

Connecticut:

The public educational system in Connecticut is characterized

by almost complete local autonomy. State funding is based on a per student rate with an adjustment for town need. Only English is required by the State for high school graduation.

Curricular matters are left to the local school district. There is no known special hurricane instruction. No civil defense course or unit is required although there may be some local programs. It is estimated that approximately one-quarter of the early secondary school population takes earth science, typically at the ninth grade.

There are several independent public television stations servicing Connecticut schools but it is thought that educational television receives limited use. Schools are generally well-equipped with conventional audiovisual equipment.

Inservice teacher training is left to the local school districts. There are regional educational centers which house curricular materials which are loaned out to member school districts.

Rhode Island:

Rhode Island's public education system is based on local school district autonomy. The State does set some broad curricular requirements for secondary education but content is left to local districts.

There are no known special school-based hurricane education programs nor are there required civil defense courses or units. Schools have conventional audiovisual equipment.

There is no requirement for teachers in Rhode Island to participate in inservice training after obtaining a permanent certificate. School districts do, however, offer salary increment incentives for graduate academic credit or inservice depending on local policy.

Rhode Island is somewhat unique by having a Bureau of Technical Assistance within its Department of Education. This Bureau provides curriculum development specialists who work directly with the schools.

Massachusetts:

Local schools in Massachusetts have complete autonomy. The State Department of Education has no control over curricula. State Department

of Education personnel have no role in determining curricula, implementation of curricula, or teacher training.

There is no special instruction on hurricanes nor is there any required civil defense unit or course.

Local funds are available generally if teachers and department heads feel curricular material purchases are worthwhile.

The schools are generally well equipped with audiovisual equipment including videotape players. There is educational television in Massachusetts but the extent of its use is left entirely up to local school districts.

Teachers are encouraged to undergo inservice training as salary increases are related to the number of credits earned. Inservice training is typically conducted by the local school district.

New Hampshire:

New Hampshire public schools enjoy local autonomy and have the responsibility of making all curricular decisions.

There is no known special instruction on hurricanes although there is some reported use of Your Chance to Live materials in grades 4, 8 and 9. However, there is no known civil defense course as such.

Conventional audiovisual equipment is generally available. Funds usually exist for purchases of curricular materials on the recommendation of teachers.

New Hampshire teachers must complete 50 clock hours of staff development every three years for recertification purposes. They may take college courses, locally designed workshops, and programs sponsored by the State Department of Education and various teachers' associations such as the New Hampshire Science Teachers Association. State Department of Education consultants participate in teacher training activity on request.

Maine:

The schools of Maine operate with almost total autonomy. Aside from the meeting of some general State statute requirements, curriculum

matters are left to local school districts.

The only hurricane instruction going on in Maine schools is probably that based on what is found in conventional textbooks. However, there is a possibility of additional instruction in some oceanography programs in coastal schools. There is no known civil defense instruction. All elementary and early secondary schools teach social studies and science. Earth science is typically taught at the ninth or tenth grade level.

There is state-wide educational television. Schools are typically well-equipped with conventional audiovisual equipment.

School funds in Maine are controlled at the local level. The principal usually determines what curricular materials will be purchased.

Inservice teacher training is required for recertification purposes. College or inservice credit may be applied towards recertification. In many cases, local school districts conduct their own training programs which have been approved for inservice credit.

Sea Grant and the Marine Advisory Service

During the information-gathering phase of this study, mention by persons contacted of Sea Grant programs and state-level Marine Advisory Service Offices was frequent. Further investigation showed that a number of these programs and offices have either developed, assisted in the development, or are contemplating the development of educational materials related to hurricanes in their respective areas. This information was acquired through direct interview and responses to letters of inquiry.

The Texas Sea Grant Program has been actively involved in the hurricane problem for some time. It has published studies on Texas hurricanes and supports research studies dealing with the hurricane threat. Its Texas A & M Marine Advisory Services Program has become an active partner in the Hurricane Awareness Program of the Texas Coastal and Marine Council, primarily through the efforts of county marine agents and specialists along the coast.

The Florida Marine Advisory Program has also been involved in hurricane education. It has prepared and distributed leaflets such as "Building Construction on Shoreline Property" which alert prospective buyers or current owners of shore properties of storm surge and wind problems associated with hurricanes. The Program has also shown a strong interest in school-based educational activity on hurricanes and other weather hazards. It has apparently already initiated a pilot study with schools in one county of Florida dealing with hazardous weather. The Program's commitment to dealing with weather hazards is evidenced by having on its staff a National Weather Service meteorologist experienced in disaster preparedness activity.

The Marine Advisory Services in other states are known to have supported various studies and publications on hurricanes and related phenomena. In addition to the Texas and Florida Marine Advisory Services, those in Alabama, Georgia, North Carolina, Virginia, Maryland, Delaware, New Jersey, New York, and the New England Marine Advisory Service (regional association of Marine Advisory Services in Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut and New York) have all indicated positive interests in (a) the possibility of working with other organizations in the implementation of hurricane awareness instructional units in coastal schools and (b) assisting in the development of hurricane awareness instructional units specifically targeted for use in coastal schools of their respective states.

Other Agencies and Organizations

Civil defense or disaster preparedness agencies in a number of states have been and/or are active in hurricane activity. The extent of their activity varies a great deal from state to state. It is known, for example, that in Mississippi, Alabama, and South Carolina there has been significant interaction with schools directly or through their respective state education departments. Currently, the North Carolina Office of Civil Preparedness is developing an emergency preparedness educational program, K-12, to be integrated into existing curricula. There is considerable potential for cooperative efforts with

state civil defense or civil preparedness agencies in the development and implementation of hurricane education materials. This is especially true if the assumption can be accepted that a broad and general understanding of the nature of potential threats is of primary importance and prerequisite to the development of adequate preparedness and response behavior.

The resources necessary to widely implement a hurricane awareness education program are obviously substantial. Successful curriculum and implementation efforts by the National Science Foundation over the last two decades have shown the necessity of involving non-governmental organizations. Specifically, private educational publishers need to be involved to assure widespread and continuing marketing efforts. The use of commercial publishers also diffuses the public cost of instructional materials by placing part of the burden on local school districts. To date, at least one commercial publisher has indicated an interest in marketing general hurricane awareness educational materials developed by government funding.

Hurricane awareness education in the schools could and probably should utilize consumable instructional materials which would find their ways into the homes of school children. Such materials, especially if locally-oriented, could contribute towards family and community hurricane preparedness and response education. It is thought that at least some of these materials could be provided or subsidized by private corporations or associations as a public service. One such organization, the Insurance Information Institute, has indicated interest in exploring this kind of cooperation. It is likely, as evidenced by the accomplishments of the Texas Coastal and Marine Council in receiving private assistance in its Hurricane Awareness Program, that such support would be forthcoming from a number of sources.

Chapter IV

SUMMARY OF FINDINGS AND CONCLUSIONS

An assessment study was undertaken to (a) determine the status of school-based hurricane awareness education in the Gulf and Atlantic coastal states and (b) gather information to be used as the basis for outlining a plan of action to develop and implement hurricane education programs in these states. The purpose of this chapter is to summarize the major findings of the assessment study and to draw some conclusions which are thought to be pertinent to the task of developing and implementing adequate school-based hurricane awareness instructional units in threatened areas.

Target School Populations:

Of the 45 million students in the 90,000 public elementary and secondary schools of the United States (Williams and Warf, Education Directory, Public School Systems, 1976-77, 1977), about 18.5 million were enrolled in 31,400 Gulf and Atlantic coastal state schools staffed with some 943,000 teachers. In these coastal states there were about 1.4 million students and 70,000 teachers at each elementary grade level and approximately 1.55 million students and 78,000 teachers at each early secondary grade level.

In the coastal counties of these states there were 7.3 million students in 10,700 schools. It is estimated that at each grade level there were somewhere between 550,000 and 600,000 students and 27,000 to 30,000 teachers.

While not attempted in this study, a determination of the numbers of students, teachers and schools living directly on the coasts and in areas most vulnerable to the destructive effects of hurricane land-falls would show them to be substantially smaller than the figures stated above.

Student populations in the non-public schools of coastal states are significant. Non-public school enrollment figures were not obtainable in the majority of the states examined. However, based on the available data, it appears that Louisiana may be the coastal state with the greatest proportion of its student population in non-public schools. In its coastal parishes, about 23% of its total student population (K-12) were enrolled in non-public schools during the 1976-77 school year. In Florida, about 11% were in non-public schools; in Maryland, 13%; and in Delaware, 16% (see Tables XVI-XVII). The data indicate the need to consider non-public schools in any curriculum development and implementation effort whose objectives are directed towards the general public.

Organization of School Systems:

The organizational structures of state school systems are as varied as the number of states involved. These structures cover a wide spectrum from those that are strongly controlled at the state level to those which leave practically all decisions to local school districts. Most states exert some control over local school districts through various mandates or statutes, state funding, approved textbook lists, accreditation, and teacher certification. A few states exert strong controls through their departments of education and stipulate what subjects should be taught and for how long. But regardless of the extent of central control, the details of curriculum content and day-to-day instructional objectives in all the states are left up to the local school districts and the teachers themselves.

School Curricula:

The state-by-state analysis of science, social studies and civil defense curricula strongly suggest that science and social studies are taught throughout the elementary and early secondary grades. It appears that social studies textbooks largely dictate what is taught in that subject. In science, instruction at the elementary level is less structured and taught to a large extent based on available resources,

local curricula, and teacher choice. At the early secondary level, earth science is taught at the eighth or ninth grade level for the majority of students. This course usually devotes one-quarter to one-half of its content to the study of the atmosphere. Students not taking earth science typically take general science courses which include weather topics. Textbooks usually determine what is taught. Civil defense units are seldom taught except in one or two states where such instruction is mandated. Then, teaching appears to be based on state or Defense Civil Preparedness Agency instructional materials.

States which have approved textbook lists probably exert the strongest control over curriculum. However, these states allow flexibility by approving a variety of textbooks and other instructional materials in any particular subject. Further flexibility is allowed as, apparently in all states which utilize approved textbook lists, schools can purchase texts not on the lists with state funds if justified and/or they may utilize local funds.

The instructional time available in schools is fully allocated and utilized. Time allotments to various subjects and activities have resulted from years of fine-tuning by mandates, needs, competitive interests, and pedagogical considerations. Consequently, those curricular innovations (even if mandated) which require the assignment of new and separate blocks of time and associated resources face extreme difficulties in implementation. Curricular innovations which can be introduced within existing courses have greater implementation potential. But they must be considered highly worthwhile and necessary as they too must displace something which is already being taught.

Existing School Hurricane Education Programs:

None of the states surveyed is known to have what could be called a bona fide school-based hurricane awareness education program. Some hurricane awareness education is going on in science and civil defense instructional units in several states. At best, the instruction seems to be restricted to a few pages of reading and/or the viewing of a film or television program. Civil defense materials

generally treat hurricanes in a minimal and cursory manner. The "safety rules" approach typical of civil defense materials appears to prevent their widespread acceptance and use unless mandated.

Very little, if any, instructional material focusing on the local aspects of the hurricane is known to exist. Also, there are very few commercially available instructional materials on hurricanes available. There is a dearth of appropriate student-oriented printed matter on hurricanes (the "Owlie Skywarn" booklet on hurricanes being the major exception). General descriptive articles on hurricanes and

* related phenomena written at levels for teacher use are few and generally unavailable or unknown to teachers. A school which wanted to develop its own hurricane awareness education unit would find it extremely difficult to find resource materials with which to work.

It must be mentioned that the majority of state education department personnel interviewed did not perceive any great urgency to implement hurricane education programs on statewide bases. Most did see a need to direct efforts specifically to coastal area schools, leaving the schools in the rest of each state to acquire and implement general hurricane curricular materials as more or less part of routine upgrading of instruction.

State department science consultants and other educators interviewed were almost unanimous in stating that short instructional units containing at least some locally-oriented materials which could be integrated into existing courses would have the greatest potential for widespread use. At the elementary school level, such units could and probably should cut across subject matter areas as (a) children do not think in isolated and compartmentalized subject matter areas, (b) all major subjects are usually taught by the same teacher, (c) elementary school teachers often prefer to teach broad, comprehensive units cutting across several subject matter areas, and (d) the content of hurricane awareness educational materials draws from both the physical and social realms of knowledge. At the secondary level, the cross-disciplinary approach to hurricane awareness education is hampered by the departmentalization of subject matter areas with teachers ordinarily

is local material necessary? ERIC

teaching only one subject. Ideally, science and social studies teachers would team-teach a hurricane awareness instructional unit. In practice this would seldom happen because of scheduling and other problems. Consequently, units tied to specific subjects would have the greatest potential for implementation at the early secondary school level. Separate units in science and social studies which could be taught simultaneously or independently might well prove to be the best approach at this level.

There was general agreement that hurricane awareness education should be approached from a broad perspective. It was suggested that hurricane awareness might, by itself, be too narrow a topic to gain widespread acceptance. Instead, an introductory unit on general weather awareness might precede hurricanes as a topic. This would give students the opportunity to directly relate to something current and observable in their own surroundings. Once introduced to the day-to-day happenings of the atmosphere, they could be easily led into meaningful hurricane education learning experiences. The point was made by several persons interviewed that an introductory general weather awareness experience could have universal application in school-based preparedness education efforts. For example, in tornado-prone areas it could precede a unit specifically on tornadoes. Or in Florida it could lead to successive units on hurricanes, tornadoes, and thunderstorms and lightning.

There was also widespread agreement that the subject matter content of any hurricane awareness unit should focus on general awareness of the nature of hurricanes and the potential impacts of hurricanes on people and property. It was felt that it would be very important to build a foundation of understandings and attitudes which would hopefully lead to adequate long-term and short-term hurricane preparedness decision-making and actions. The teaching of hurricane safety rules and the like would be relegated to (a) activities in which students would develop their own guidelines rationally based on their own understandings of the crisis they might someday face, and (b) printed materials designed to be taken home and perused by the family after school use.

Educational Delivery Systems and Audiovisual Equipment:

The public schools in the states examined in the study appear to be universally equipped with filmstrip and slide projectors, 16-mm. motion picture projectors, and audio tape players. Holdings of specialized individualized instructional equipment, film-loop projectors, television receivers, videotape players, and basic science equipment vary a great deal from state to state and from school to school within states. It was recommended by numerous state department of education personnel that only the most economical audiovisual materials which utilize the most common equipment be developed.

Several states have highly developed educational television systems, but the majority do not. The difficulties of using educational television as a vehicle for hurricane awareness education are compounded as in some states the coastal areas are not completely covered by educational television and/or the schools are inadequately equipped. Those states with sophisticated systems often operate with statewide programming. Problems could be encountered in scheduling suitable viewing times in these states if a hurricane education program targeted at coastal areas were implemented.

It has been concluded that instructional material on hurricanes might best be developed with filmed materials which, if desired, could be used in television program production at a later time. It does appear that videotapes could be used in teacher training as locations where such activities are likely to take place would have or could be temporarily equipped with videotape players of a common configuration.

Available Resources:

Resources in the various coastal states for educational purposes are somewhat limited. In a number of cases, state funds for the purchase of instructional materials are either not available or restricted to the acquisition of certain kinds of materials (textbooks, printed matter used more than once, etc.) or materials appearing on state-approved lists. However, it does appear that all states allow

the use of locally generated school funds to be used as the district decision-makers see fit. Unfortunately, coastal areas are sometimes the least able to afford the purchase of materials with local funds because of their low tax bases.

Discussions with state education department personnel have led to the conclusion that the majority of coastal schools could afford and probably would purchase modest amounts of hurricane education instructional materials if they felt they were needed. However, it appears some schools would have to be supplied instructional materials if a widespread hurricane education program were to be implemented. Overall, evidence suggests that in the majority of states there are likely to be governmental and private sources of support to carry out a successful development and implementation program.

There is every indication that in all coastal states there are expert personnel available and interested in developing and implementing hurricane education programs. State education department personnel have shown genuine concern about the hurricane problem and appear ready to actively participate. Generally, state Marine Advisory Service offices have shown interest in the development and implementation of locally oriented instructional materials. And there seems little doubt that local National Weather Service personnel, civil defense officials, and the like would willingly participate. Also, it can be expected that persons involved in teacher training at colleges, universities and education service centers would become actively involved.

It is also expected that National Hurricane Center personnel would make significant contributions, especially in the development of background technical information for the production of materials on general hurricane topics and in the critical review of proposed instructional materials.

Teacher Training:

The successful implementation of new curricular materials requires adequate inservice teacher training. An analysis of inservice teacher training practices shows that the majority of states require teacher

involvement in staff development activity. In these states, teachers must spend a specified amount of time in staff development activity or accumulate inservice or college credit in order to retain their positions and teaching certificates. Numerous school districts offer salary incentives to encourage continuing education activity by teachers. Many teachers, of their own initiative, as dedicated professionals, take advantage of staff development opportunities to upgrade their teaching.

The statistical data collected in this study show that the numbers of teachers at specific grade levels in coastal states and coastal school districts are substantial. States such as Florida have large numbers of coastal school teachers at each grade level while Mississippi, Alabama, Georgia, Rhode Island and New Hampshire are among those with relatively few. These numbers dictate that teacher training strategies be tailored to each state. In some locations, training workshops open to all teachers at a specific grade level would probably be appropriate. In most states, however, mechanisms in which educators at local teacher training institutions, curriculum supervisors or master teachers are trained to teach teachers, and/or self-instructional training kits in which teachers learn while actually implementing hurricane units would probably be the best vehicles for implementation. Obviously, a number of factors besides teacher population including availability of resources and expertise and the extent to which locally-oriented instructional material is included must be taken into account when devising the implementation phase.

Content of Hurricane Awareness Education Materials:

The consensus of persons interviewed in this study was that instructional materials should deal with both the physical and social aspects of hurricanes and related phenomena. After successfully completing a comprehensive learning experience on hurricane awareness, the student should be able to:

1. Demonstrate the acquisition of general scientific knowledge about the physical characteristics of hurricanes and related phenomena including size, shape, dynamics, variability, frequency, and relative

positions of the most extreme conditions with special emphases on storm surge, high winds and fresh water flooding.

2. Apply these understandings in gathering and analyzing information to describe the impact of hurricane landfalls of various intensities on people and property, with special emphasis on landfalls in the local geographical area. These descriptions will include the review of actual historical events as well as the development of scenarios of possible future occurrences.

3. Show evidence of being able to utilize basic understandings about hurricanes and related phenomena to propose rational short-term and long-term preparedness actions which could be taken by individuals, families, and communities to mitigate the devastating effects of hurricane occurrences.

4. Apply developed hurricane preparedness recommendations to his/her environment and show evidence of having made efforts to promote adequate hurricane preparedness at the individual, family and community level.

5. Demonstrate knowledge of individual, family and community preparedness plans and actions designed to mitigate the effects of a hurricane landfall.

6. Show evidence of being able to adequately interpret hurricane watch and warning messages.

Production and Marketing of Hurricane Instructional Materials:

The evidence gathered indicates the need to develop both general and locally-oriented instructional materials. There is a nationwide need for general instructional materials on hurricanes due to the high mobility of the U. S. population and the current lack of such materials through commercial channels. There is need for locally-oriented materials in coastal areas because of the diversity of environmental conditions and the desirability of focussing educational efforts on those threatening conditions most likely to be encountered.

The numbers of schools and classrooms involved in a widely implemented hurricane awareness education program, even if limited to

coastal areas, is large, The financial resources and marketing mechanisms which would assure adequate program implementation require the combined efforts of Federal, state and local governments and private enterprise.

The experiences of the National Science Foundation in curriculum material development and implementation show that the process can be enhanced by utilizing Federal funds to develop materials which are produced and marketed by commercial publishers. Schools then purchase the materials with their own funds routinely set aside for the acquisition of instructional materials. Developed material is sometimes purchased with Federal funds for pilot projects and to equip persons who conduct teacher training programs.

Only general instructional materials could be expected to be commercially marketed. Locally-oriented materials would have to evolve and be distributed with government or private funding. It seems reasonable that through the combined efforts of a number of agencies such a task could be accomplished.

The Texas Coastal and Marine Council has shown that non-governmental interests can be called upon to support the production and dissemination of hurricane awareness education materials. The Council's experience indicates that for reasons of vested interest and/or public service, trade associations and the like are receptive to assisting in hurricane awareness education efforts.

Contacts made with commercial publishers and trade associations indicate that working relationships could be developed which would promote the development, production and implementation of general and locally-oriented hurricane instructional materials.

Hurricane Awareness Education Material Evaluation:

All materials developed should be subjected to evaluation processes (a) during their development to assure technical and pedagogical quality, and (b) during or after implementation to attempt a determination as to whether or not the use of the materials result in the learning of desirable understandings about hurricanes and hurricane

preparedness.

The overall quality of materials should be assured through a reviewing process by an advisory board composed of technical and educational specialists. All materials should be developed with input from teachers and students and trial-tested in classrooms before becoming finished products.

Pre- and post-testing should be done in selected classrooms before and after implementation to determine the educational benefits of the hurricane awareness instructional units. Should an actual hurricane landfall take place in areas where testing has taken place, follow-up studies should be undertaken to determine what effect, if any, school-based instruction had on individual and family hurricane preparedness and behavior.

Chapter V

RECOMMENDATIONS

The recommendations and suggested plan of action contained in this chapter are based on the assumption that school-based educational activity is fundamental to the development of adequate public weather disaster preparedness and response behavior. The following general recommendations or guidelines for action have evolved from the assessment phase of this study:

1. The keys to successful school-based preparedness education are the schools, school personnel and school curricula. Efforts to introduce or upgrade school-based preparedness education must be approached from the perspective of the educational systems involved and must take into account the realities of today's elementary and secondary schools.
2. Schools and school personnel are more likely to be receptive to curricular innovations which focus on broad educational goals and include opportunities for student activity, investigation and inquiry rather than those curricula based on narrow training objectives.
3. School-based preparedness education should be directed towards the development of understandings and attitudes which lead to both long- and short-term preparedness considerations. Positive approaches to preparedness concepts should be utilized with attention given to actions which if taken over the long term could lessen or even eliminate the need for some short-term preparedness and response actions.
4. School-based preparedness education should be coupled with instruction which increases general awareness and understanding of the day-to-day weather experienced by the student. Study of weather as it happens will (a) promote desirable habits of listening to weather forecasts, (b) provide experience in interpreting and utilizing available weather information, and (c) set the stage for the study of

infrequent but potentially devastating hazardous weather events.

5. School-based weather preparedness education programs should include (a) materials of general enough interest to be commercially marketable to assure widespread distribution, and (b) materials based on local environmental and social conditions, historical occurrences and scenarios of possible future events.

6. Strong implementation and teacher training efforts are necessary if curricular innovations are to gain widespread acceptance and utilization. Specific recommendations or guidelines for action directed towards the development and implementation of hurricane awareness education programs are as follows:

a. Key public educational system personnel in the Gulf and Atlantic coastal states perceive a genuine need to establish hurricane education programs in coastal areas most susceptible to the destructive forces associated with hurricane landfalls. These same persons have indicated willingness to participate in program implementation.

b. Mechanisms, expertise and resources exist or are potentially available for the development and implementation of school-based hurricane education programs in coastal schools.

c. The educational content of materials likely to be developed should be broadly based, deal with physical and social aspects of hurricane occurrences, and be of relatively short duration. The materials should be economical and largely self-contained.

d. Instructional materials should be identified with specific school subjects at the fifth-sixth grade and/or junior high school levels. It is recommended that they be implemented as "science".

e. Technical expertise from the National Hurricane Center, National Weather Service offices, and elsewhere should be encouraged to develop background information on hurricanes and related phenomena for use in the development of general and locally-oriented instructional materials.

f. The actual development of hurricane awareness education programs should proceed with at least one pilot project involving schools, teachers and students in a vulnerable coastal area.

Plan of Action:

1. Establish and fund a School Weather Preparedness Education Program with (a) the short-term objective of introducing and/or improving hurricane awareness education in Gulf and Atlantic coastal schools to promote adequate hurricane preparedness, and (b) the long-term objective of upgrading weather education in the schools of the United States to promote weather disaster preparedness throughout the country.

2. Initiate, through the School Weather Preparedness Education Program, (a) the development of general instructional materials on introduction to weather study and hurricanes, (b) the operation of at least one pilot project (Texas and/or Florida) to develop locally-oriented instructional materials, trial test all instructional materials developed, and devise and trial-test implementation and teacher training strategies, (c) develop procedures for the development and implementation of hurricane awareness education programs in other Gulf and Atlantic coastal states, and (d) encourage the development of background technical and information on hurricanes suitable for teacher use and curriculum material development

3. The following outline is presented to suggest activity for the purpose of developing and implementing school-based hurricane awareness programs in Gulf and Atlantic coastal schools:

Phase I: Assessment Study (completed)

Phase II: Curricular Material and Implementation Strategy Development via Pilot Study

A. Curricular Material Development

1. Introduction to Weather Study Unit
 - a. General Component
 - b. Local Component
2. Hurricane Awareness Unit
 - a. General Component
 - b. Local Component

- B. Implementation Strategy Development
 - 1. Teacher Training Mechanisms
 - a. Self-instruction kits
 - b. Workshop format
 - 2. Implementation Processes
 - a. Selection of appropriate teacher training mechanism
 - b. Identification and training of key personnel
 - c. Identification of cooperating agencies and resources

Phase III: Implementation and Evaluation

- A. Pilot Study State
- B. Other Coastal States
- C. Evaluation of Instructional Units

Time Table: Phase I - One year
Phase II - Two years
Phase III - Two to three years

Pilot Study: Texas (Recommended)
Joint National School Weather Project and Education
Service Center IV, Houston, effort to carry out Phase
II objectives.

APPENDIX

PUBLIC SCHOOL STUDENT POPULATIONS (K-12) AND NUMBERS
OF SCHOOLS IN GULF AND ATLANTIC COASTAL COUNTIES BY STATE,
1976-77.

Source: Jeffrey W. Williams and Sallie L. Warf, Education Directory, Public School Systems, 1976-77, National Center for Education Statistics, Education Division, U.S. Department of Health, Education, and Welfare, U.S. Government Printing Office, Washington, D.C., 1977.

Public School Systems
1976-77

Texas

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
<u>Aransas County:</u>			
Aransas County ISD	K-12	2,132	5
<u>Brazoria County:</u>			
Alvin ISD	K-12	7,026	9
Angleton ISD	"	4,290	6
Brazosport ISD	"	10,371	16
Columbia-Brazoria ISD	"	2,668	7
Damon ISD	K-8	149	1
Danbury ISD	K-12	524	2
Pearland ISD	"	4,598	5
Sweeny ISD	"	1,858	4
		<hr/> 31,484	<hr/> 50
<u>Calhoun County:</u>			
Calhoun County ISD	K-12	4,824	12
<u>Cameron County:</u>			
Brownsville ISD	K-12	21,875	28
Harlingen ISD	"	11,172	18
LaFeria ISD	"	1,826	5
Los Fresnos Cisd	"	2,281	5
Point Isabel ISD	"	1,662	4
Rio Hondo ISD	"	1,283	3
San Benito Cons. ISD	"	6,260	12
Santa Maria ISD	K-8	298	1
Santa Rosa ISD	K-12	822	2
South Texas ISD	-	407	2
		<hr/> 47,886	<hr/> 80
<u>Chambers County:</u>			
Anahuac ISD	K-12	1,118	3
Barbers Hill ISD	"	850	3
East Chambers ISD	"	1,080	3
		<hr/> 3,048	<hr/> 9

Texas (continued)
Galveston County:

Clear Creek ISD	K-12	14,975	15
Dickinson ISD	"	4,234	5
Friendswood ISD	"	2,794	4
Galveston ISD	PK-12	10,880	16
High Island ISD	K-12	257	2
Hitchcock ISD	"	1,654	4
La Marque	"	5,925	10
Santa Fe ISD	"	2,955	4
Texas City ISD	"	6,046	8
		<hr/>	<hr/>
		49,720	68

Harris County:

Aldine ISD	K-12	30,994	29
Alief ISD	"	8,631	12
Channelview ISD	"	4,054	5
Cypress-Fairbanks ISD	"	12,701	13
Deer Park ISD	PK-12	7,632	9
Galena Park ISD	K-12	10,916	14
Goose Creek ISD	"	14,383	20
Houston ISD	"	204,410	232
Huffman ISD	"	1,328	3
Humble ISD	"	5,044	7
Katy ISD	"	3,054	6
Klein ISD	"	8,197	8
LaPorte ISD	"	4,994	8
North Forest ISD	"	17,051	16
Pasadena ISD	"	35,656	38
Sheldon ISD	"	3,281	6
Spring Branch ISD	"	39,277	39
Spring ISD	"	6,921	11
Tomball ISD	"	2,014	5
		<hr/>	<hr/>
		420,538	481

Jackson County:

Edna ISD	K-12	1,845	5
Ganado ISD	"	728	2
Industrial ISD	"	723	5
		<hr/>	<hr/>
		3,296	12

Jefferson County:

Beaumont ISD	K-12	11,953	19
Hamshire-Fannett ISD	"	1,281	5
Nederland ISD	"	5,894	7
Port Arthur ISD	"	12,932	18
Port Neches ISD	"	6,032	9
Sabine Pass ISD	"	240	2
South Park ISD	"	11,396	17
		<hr/>	<hr/>
		49,728	77

(continued)

Texas (continued)Kenedy County:

Kenedy County Wide CSD	K-8	79	2
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Kleberg County:

Kingsville ISD	K-12	6,090	10
Laureles Risd	1-6	34	1
Ricardo ISD	K-8	312	1
Riviera ISD	K-12	556	2
Santa Gertrudis ISD	1-8	115	1
		<hr/>	<hr/>
		7,107	15

Matagorda County:

Bay City ISD	K-12	3,766	8
Matagorda ISD	K-5	39	1
Palacios ISD	K-12	1,237	4
Tidehaven ISD	"	810	4
Van Vleck ISD	"	959	3
		<hr/>	<hr/>
		6,811	20

Nueces County:

Aqua Dulce ISD	PK-12	388	2
Banquete ISD	K-12	600	3
Bishop Cons ISD	"	1,505	5
Calallen ISD	"	2,461	5
Corpus Christi ISD	"	40,384	61
Driscoll ISD	K-8	178	1
Flour Bluff ISD	K-12	3,386	5
London ISD	K-8	124	1
Port Aransas ISD	"	212	1
Robstown ISD	K-12	4,826	6
Santa Cruz ISD	K-6	64	1
Tuloso-Midway ISD	K-12	2,166	4
West Oso ISD	"	2,388	5
		<hr/>	<hr/>
		58,682	100

Orange County:

Bridge City ISD	K-12	2,788	4
Little Cypress-Mauricevil ISD	"	2,905	5
Orangefield ISD	"	1,255	4
Vidor ISD	"	5,757	5
West Orange Cove Cons. ISD	PK-12	6,303	16
		<hr/>	<hr/>
		19,008	34

Refugio County:

Austwell-Tivoli ISD	K-12	356	3
Refugio ISD	"	1,245	3
Woodsboro ISD	"	769	3
		<hr/>	<hr/>
		2,370	9

(continued)

Texas (continued)San Patricio County:

Aransas Pass ISD	K-12	1,921	4
Gregory-Portland ISD	"	3,697	5
Ingleside ISD	"	1,405	4
Mathis ISD	"	2,362	5
Odem ISD	"	1,046	4
Sinton ISD	"	2,320	5
Taft ISD	"	1,867	5
		<hr/> 14,618	<hr/> 32

Willacy County:

Lasara ISD	K-8	274	1
Lyford ISD	K-12	1,479	5
Raymondville ISD	"	2,798	6
San Perlita ISD	"	272	2
		<hr/> 4,823	<hr/> 14

Coastal County Total (98)		716,154	1,020
State Total		2,750,161	5,291

Public School Systems
1976-77

Louisiana

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
Cameron Parish	K-12	2,136	7
Iberia Parish	"	15,872	28
Jefferson Parish	"	68,663	82
Lafourche Parish	"	18,825	31
Orleans Parish	"	92,257	142
Plaquemines Parish	"	5,351	7
St. Bernard Parish	"	12,598	17
St. Mary Parish	"	14,910	32
St. Tammany Parish	"	19,028	33
Terrebonne Parish	"	22,629	41
Vermilion Parish	"	9,889	21
Coastal Parish Total (11)		282,158	441
State Total		809,674	1,505

Public School Systems
1976-77

Mississippi

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
<u>Hancock County:</u>			
Bay Saint Louis Mun. Sep.	1-12	1,969	4
Hancock County	"	1,796	4
		<hr/> 3,765	<hr/> 8
<u>Harrison County:</u>			
Biloxi Mun. Sep.	1-12	7,669	13
Gulfport Mun. Sep.	"	7,425	16
Harrison County	"	9,676	16
Long Beach Mun. Sep.	"	3,403	5
Pass Christian Mun. Sep.	"	1,486	4
		<hr/> 29,659	<hr/> 54
<u>Jackson County:</u>			
Jackson County	1-12	6,448	8
Moss Point Mun. Sep.	"	6,780	9
Ocean Springs Mun. Sep.	"	4,214	8
Pascagoula Mun. Sep.	"	8,667	16
		<hr/> 26,109	<hr/> 41
Coastal County Total (11)		59,533	103
State Total		505,342	1,063

Public School Systems
1976-77

Alabama

Coastal School Units

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u>Schools</u>
Baldwin County	1-12	14,565	18
Mobile (City- County)	1-12	<u>64,271</u>	<u>82</u>
		78,836	100
Total State School Units		751,669	1,370

Public School Systems
1976-77
Florida

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u>Schools</u>
Bay County	K-12	19,905	29
Brevard County	"	54,325	71
Broward County	"	138,626	146
Charlotte County	"	5,826	10
Citrus County	"	6,669	13
Collier County	"	12,660	21
Dade County	"	244,805	245
Dixie County	"	1,686	3
Duval County	"	111,490	138
Escambia County	"	47,985	66
Flagler County	"	1,471	2
Franklin County	"	1,863	4
Glades County	"	1,197	2
Gulf County	"	2,644	5
Hendry County	"	4,154	7
Hernando County	"	5,595	8
Hillsborough County	"	116,554	134
Indian River County	"	8,933	14
Jefferson County	"	2,481	3
Lee County	"	27,826	40
Levy County	"	4,043	8
Manatee County	"	19,853	29
Martin County	"	8,039	11
Monroe County	"	9,565	15
Nassau County	"	7,420	12
Okaloosa County	"	26,545	36
Okeechobee	"	4,140	5
Palm Beach County	"	70,926	85
Pasco County	"	21,631	24
Pinellas County	"	92,078	113
Saint Johns County	"	7,532	16
Saint Lucie County	"	12,564	14
Santa Rosa County	"	12,163	22
Sarasota County	"	23,475	23
Taylor County	"	3,816	7
Volusia County	"	36,052	54
Wakulla County	"	2,311	4
Walton County	"	3,892	10
Coastal Total		1,182,740	1,449
State Total (67 units)	"	1,551,538	1,985

Public School Systems
1976-77

Georgia

Coastal School Units

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u>Schools</u>
Byran County	K-12	2,223	4
Camden County	K-12	3,070	4
Chatham County (Savannah)	K-12	34,350	55
Glynn County	K-12	10,697	11
Liberty County	K-12	3,984	6
McIntosh County	K-12	2,036	4
Total Coastal County (6)		56,360	84
Total State School (127)		1,068,854	1,770

Public School Systems
1976-77

South Carolina

Coastal School Units

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
Beaufort County	1-12	9,092	19
Charleston County	1-12	50,612	79
Georgetown County	1-12	8,854	19
Horry County	1-12	17,966	32
Colleton County	1-12	6,279	16
Coastal School Unit Totals		92,803	165
Total State School Units (92)		601,513	1,103

Public School Systems
1976-77

North Carolina

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
Beaufort County	K-12	4,552	9
Washington City	"	3,954	5
Bertie County	"	5,391	10
Brunswick County	"	7,641	11
Camden County	"	1,467	3
Carteret County	"	7,208	12
Chowan-Edenton	"	2,667	5
Currituck County	"	2,324	6
Dare County	"	1,988	4
Hyde County	"	1,272	4
New Hanover County	"	20,011	33
Onslow County	"	15,200	24
Pamlico County	"	2,332	4
Pasquotank County:			
Pasquotank-Elizabeth	"	5,866	9
Pender County	"	4,773	12
Perquimans County	"	1,951	4
Tyrrell County	"	934	2
Washington County	"	3,796	7
Coastal County Total (18)		93,327	164
State Total		1,165,964	2,023

Public School Systems
1976-77

Virginia

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
Accomack County	K-12	6,213	14
Cape Charles	"	364	1
Chesapeake City	"	27,033	34
Colonial Beach	"	513	1
Gloucester County	"	3,420	6
Hampton City	"	29,931	37
Isle of Wight County	"	4,613	6
Lancaster County	"	1,952	3
Mathews County	"	1,407	4
Middlesex County	"	1,423	4
NewPort News	"	29,976	38
Norfolk City	"	46,891	66
Northampton County	"	2,878	8
Northumberland County	"	1,881	7
Poquoson City	"	1,923	3
Portsmouth City	"	22,300	33
Richmond County	"	37,487	62
Suffolk City	"	11,270	21
Surry County	"	1,406	4
Virginia Beach City	"	55,226	54
Westmoreland County	"	2,569	6
Williamsburg City-James City County	"	5,035	7
York County	"	9,050	15
Coastal County Total		304,761	434
State Total		1,094,136	1,781

Public School Systems
1976-77

Maryland

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
Anne Arundel County	K-12	77,203	108
<u>Baltimore County:</u>			
Baltimore County	K-12	122,820	161
Baltimore City	PK-12	165,101	201
Calvert County	"	6,829	15
Caroline County	K-12	5,189	9
Cecil County	"	13,089	25
Dorchester County	"	6,020	15
Harford County	PK-12	33,659	39
Kent County	K-12	3,517	8
Queen Annes County	"	4,726	9
Somerset County	PK-12	4,289	17
St. Marys County	"	11,885	25
Talbot County	K-12	4,580	13
Wicomico County	"	13,519	25
Worcester County	"	6,268	15
Coastal County Total (15)		478,694	685
State Total		870,974	1,352

Public School Systems
1976-77

Delaware

	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
<u>Kent County:</u>			
Ceasar Rodney	K-12	7,775	11
Capital	"	6,441	10
Lake Forest	"	3,539	5
Milford	"	3,809	6
Smyrna	"	3,093	5
		<hr/> 24,657	<hr/> 37
<u>New Castle County:</u>			
Alexis I. Dupont	K-12	3,254	7
Alfred I. Dupont	"	10,280	16
Appoquinimink	"	2,358	5
Claymont	"	3,261	6
Conrad Area	"	5,227	9
De La Warr	"	3,073	6
Marshallton-McKean	"	3,655	5
Mount Pleasant	"	4,805	6
New Castle County Voc. Tech.	10-12	1,601	1
New Castle-Gunning Bedford	K-12	8,890	12
Newark	"	16,878	23
Stanton	"	5,296	9
Wilmington	"	13,877	22
		<hr/> 82,455	<hr/> 127
<u>Sussex County:</u>			
Cape Henlopen	K-12	3,751	9
Delmar	7-12	718	1
Indian River	K-12	6,432	11
Laurel	"	2,150	3
Seaford	"	3,706	6
Woodbridge	"	2,037	4
		<hr/> 18,794	<hr/> 34
Coastal County Total (24)		125,906	198
State Total		125,906	200

Public School Systems
1976-77

New Jersey

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
<u>Atlantic County:</u>			
Absecon	K-8	1,077	2
Atlantic City	K-12	8,301	14
Atlantic Co. Vocational	9-12	542	1
Brigantine	K-8	899	2
Buena Regional	K-12	2,564	7
Corbin City	K-8		
		116	2
Egg Harbor City	"	480	2
Egg Harbor Township	"	2,773	11
Estell Manor	"	148	1
Folsom	"	291	1
Galloway Township	"	1,493	6
Greater Egg Harbor Reg. High	9-12	2,783	2
Hamilton Township	K-8	1,225	2
Hammonton	K-12	2,498	3
Linwood	K-8	1,002	4
Longport	"	108	2
Mainland Reg. High	9-12	1,721	1
Margate City	K-8	1,067	3
Mullica Township	"	1,261	4
Northfield	"	1,340	4
Pleasantville	K-12	3,161	6
Port Republic	K-8	99	1
Somers Point	"	1,133	3
Ventnor City	"	991	2
Weymouth Township	"	198	1
		<hr/>	<hr/>
		37,271	87
<u>Bergen County:</u>			
Allendale	K-8	1,087	2
Alpine	"	230	1
Bergen Co. Vocational	9-12	2,349	8
Bergenfield	K-12	5,090	7
Bogota	"	1,715	4
Carlstadt	K-8	757	3
Carlstadt E. Rutherford Reg.	9-12	818	1
Cliffside Park	K-12	2,706	5
Closter	K-8	1,192	3
Cresskill	K-12	1,793	3
Demarest	K-8	634	3
Dumont	K-12	3,956	5

(continued)

New Jersey
Bergen County (continued)

East Rutherford	K-8	781	4
Edgewater	"	356	2
Elmwood Park	K-12	2,684	5
Emerson	"	1,750	3
Englewood	PK-12	3,940	6
Englewood Cliffs	K-8	776	3
Fair Lawn	K-12	5,948	12
Fairview	K-8	883	3
Fort Lee	K-12	3,410	6
Franklin Lakes	K-8	1,385	4
Garfield	K-12	3,305	8
Glen Rock	K-12	2,342	5
Hackensack	PK-12	5,678	7
Harrington Park	K-8	714	1
Hasbrouck Heights	K-12	1,763	4
Haworth	K-8	529	1
Hillsdale	K-8	1,481	3
Ho Ho Kus	"	583	1
Leonia	K-12	1,581	2
Little Ferry	K-8	996	3
Lodi Borough	K-12	3,482	8
Lyndhurst	"	2,904	8
Mahwah	K-12	2,434	6
Maywood	K-8	1,095	3
Midland Park	K-12	1,545	3
Montvale	K-8	1,163	2
Moonachie	K-8	311	1
New Milford	K-12	2,842	7
North Arlington	K-12	1,825	5
Northern Highlands Reg. High	9-12	1,417	1
Northern Valley Reg. High	9-12	3,051	2
Northvale	K-8	855	2
Norwood	K-8	670	1
Oakland	K-8	2,330	4
Old Tappan	K-8	852	2
Oradell	K-6	769	1
Palisades Park	K-12	1,721	2
Paramus	K-12	5,986	10
Park Ridge	K-12	2,092	3
Pascack Valley Reg. High	9-12	2,924	2
Ramapo-Indian Hills Reg. High	9-12	3,425	2
Ramsey	K-12	3,126	5
Ridgefield	K-12	1,720	5
Ridgefield Park	"	2,661	4
Ridgewood	K-12	6,540	10
River Dell Regional	7-12	2,083	2
River Edge	K-6	970	3
River Vale	K-8	1,523	3
Rochelle Park	K-8	508	1
Rutherford	K-12	3,073	6
Saddle Brook Township	"	2,640	5
Saddle River Borough	K-8	352	1
South Hackensack	K-8	275	1

(continued)

New Jersey
Bergen County (continued)

Teaneck	K-12	6,809	11
Tenaflly	"	2,980	6
Upper Saddle River	K-8	1,561	3
Waldwick	K-12	2,636	4
Wallington	K-12	1,168	3
Westwood Regional	"	4,504	7
Wood Ridge	"	1,535	5
Woodcliff Lake	K-8	1,054	2
Wyckoff Twp.	"	2,444	5
		<hr/> 157,067	<hr/> 295

Burlington County:

Beverly City	K-8	408	1
Bordentown City	"	839	2
Bordentown Regional	9-12	818	1
Bordentown Township	K-6	661	1
Burlington City	K-12	2,583	6
Burlington Township	"	2,550	6
Burlington Voc. Tech.	9-12	1,138	1
Chesterfield Township	K-6	296	1
Cinnaminson Township	K-12	4,544	7
Delanco Township	K-8	553	3
Delran Township	K-12	2,968	6
Eastampton	K-8	496	1
Edgewater Park Township	"	1,403	3
Evesham	"	3,180	5
Fieldsboro	PK-6	70	1
Florence Township	K-PG	1,454	3
Hainesport Township	K-8	475	1
Lenape Reg. High	9-12	4,665	3
Lumberton Township	K-8	553	1
Mansfield Township	K-6	289	1
Maple Shade Township	K-12	2,935	4
Medford Lakes	K-8	991	2
Medford Township	K-8	2,320	4
Moorestown	K-12	3,576	6
Mount Holly Township	K-8	1,676	4
Mount Laurel Township	K-8	2,603	6
New Hanover Township	"	129	1
North Hanover Township	K-6	1,626	5
Northern Burlington Co. Reg.	7-12	1,997	2
Palmyra	K-12	1,745	4
Pemberton Borough	K-8	193	1
Pemberton Township	K-12	8,163	12
Rancocas Valley Reg. High	9-12	1,874	1
Riverside Township	K-12	1,393	2
Riverton	K-8	444	1
Shamong Township	K-8	427	1
Southampton Township	"	937	1
Springfield Township	K-6	312	1

(continued)

New Jersey
Burlington County (continued)

Tabernacle Township	K-8	633	2
Washington Township	"	129	1
Westampton Township	"	397	2
Willingboro Township	K-12	13,112	14
Woodland Township	K-8	147	1
		<hr/> 77,702	<hr/> 132

Cape May County:

Avalon	K-8	219	1
Cape May City	K-6	333	1
Cape May County Voc.	8-PG	539	1
Dennis Township	K-8	498	1
Lower Cape May Regional	7-12	1,558	2
Lower Township	K-6	1,337	2
Middle Township	K-12	2,430	5
North Wildwood	K-8	444	1
Ocean City	K-12	2,259	3
Sea Isle City	K-8	213	1
Stone Harbor	"	74	1
Upper Township	"	770	2
West Cape May	K-6	64	1
Wildwood City	K-12	1,010	3
Wildwood Crest	K-8	477	2
Woodbine	"	374	1
		<hr/> 12,599	<hr/> 28

Cumberland County:

Bridgeton	K-12	6,205	10
Commercial Township	K-8	746	2
Cumberland Co. Voc. Board	10-PG	467	1
Downe Township	K-8	318	3
Hopewell Township	K-8	710	2
Lawrence Township	"	429	1
MauriceRiver Township	"	642	3
Millville	PK-PG	6,162	10
Vineland City	PK-PG	11,937	23
		<hr/> 27,616	<hr/> 55

Hudson County:

Bayonne	K-12	8,570	14
East Newark	K-8	203	1
Guttenberg	"	555	1
Harrison	K-12	1,727	3
Hoboken	K-12	6,903	9
Hudson Co. Voc.	9-12	257	1
Jersey City	K-12	36,379	37

(continued)

New JerseyHudson County (continued):

Kearny	K-12	6,031	7
North Bergen	K-12	7,179	7
North Hudson Jtr. Commission	SP-SP	98	1
Secaucus	K-11	1,824	3
Union City	K-12	8,801	9
Weehawken	"	2,206	4
West New York	"	6,237	7
		<hr/> 86,970	<hr/> 104

Middlesex County:

Carteret	K-12	4,309	7
Cranbury Township	K-8	274	1
Dunellen	K-12	1,185	3
East Brunswick Township	"	10,218	15
Edison Township	"	13,678	22
Helmetta	K-6	110	1
Highland Park	K-PG	2,144	5
Jamesburg	K-12	865	3
Metuchen	K-12	2,689	5
Middlesex Borough	"	3,101	6
Middlesex Co. Vocational	9-PG	2,156	4
Milltown	K-8	904	2
Monroe Township	K-11	2,125	5
New Brunswick	PK-PG	4,951	14
North Brunswick Township	K-12	3,914	6
Old Bridge	"	12,879	17
Perth Amboy	"	5,929	11
Piscataway Township	PK-12	8,141	12
Sayreville	K-12	6,717	10
South Amboy	"	929	2
South Brunswick Township	PK-12	4,029	10
South Plainfield	K-12	4,729	7
South River	"	3,081	5
Spotswood	K-8	1,155	3
Woodbridge Township	PK-12	18,029	30
		<hr/> 118,241	<hr/> 206

Monmouth County:

Asbury Park	PK-12	3,494	6
Atlantic Highlands	K-6	385	1
Avon	K-8	235	1
Belmar	"	644	1
Bradley Beach	"	579	1
Brielle	"	594	1
Colts Neck Township	"	1,417	3
Deal	"	224	1
Eatontown	"	2,115	5
Fair Haven	"	927	2
Farmingdale	"	189	1
Freehold Borough	"	1,276	4

(continued)

New JerseyMonmouth County (continued)

Freehold Regional	9-12	6,665	5
Freehold Township	K-8	3,653	7
Hazlet Township	K-12	5,945	9
Henry Hudson Regional	7-12	805	1
Highlands	K-6	371	1
Holmdel Township	K-12	2,555	4
Howell Township	K-8	4,477	8
Keansburg	K-12	2,069	3
Keyport	"	1,797	4
Little Silver	K-8	890	2
Long Branch	K-12	5,312	10
Manalapan-Englishtown Reg.	K-8	4,269	6
Manasquan	K-12	1,976	2
Marlboro Township	PK-8	3,548	6
Matawan Regional	K-12	6,435	8
Middletown Township	K-12	13,166	16
Millstone	K-8	549	3
Monmouth Beach	K-8	347	1
Monmouth (Cty.) Loc. Sch.	9-PG	715	1
Monmouth Regional	9-12	1,291	1
Neptune City	K-8	601	2
Neptune Township	PK-12	6,355	11
Ocean Township	K-12	4,831	6
Oceanport	K-8	815	2
Red Bank	PK-8	1,282	3
Red Bank Reg. High	9-12	1,116	1
Roosevelt Borough	PK-4	124	1
Rumson	K-8	927	2
Rumson-Fair Haven Reg. High	9-12	1,245	1
Sea Bright	K-6	106	1
Sea Girt	K-8	269	1
Shore Regional	9-12	1,174	1
Shrewsbury Borough	K-8	440	1
Spring Lake Borough	"	264	1
Spring Lake Heights	"	423	1
Tinton Falls	"	1,212	3
Union Beach	PK-8	1,113	1
Upper Freehold Regional	K-12	1,679	3
Wall Township	K-12	4,138	7
West Long Branch	K-8	901	2
		<hr/>	
		107,929	<hr/> 176

Ocean County:

Bay Head	K-8	173	1
Beach Haven	K-6	134	1
Berkeley Township	K-6	1,575	3
Brick Twp.	K-12	10,696	11
Central Regional	7-12	2,786	1
Eagleswood	K-6	103	1
Island Heights	K-6	162	1

(continued)

New Jersey
Ocean County (continued):

Jackson Township	K-12	6,611	7
Lacey Township	K-6	1,454	2
Lakehurst	K-8	731	1
Lakewood	K-12	5,524	6
Lavallette	K-8	176	1
Long Beach Island	K-6	584	2
Manchester Township	K-8	886	2
Ocean Co. Vocational	6-PG	636	4
Ocean Gate	K-6	158	1
Ocean Township	"	351	1
Plumsted Township	K-8	766	1
Point Pleasant Beach	K-12	1,119	2
Point Pleasant Borough	"	3,519	4
Seaside Heights	K-6	183	1
Seaside Park	"	153	1
Southern Co. Regional	7-12	3,019	2
Stafford Township	K-6	760	1
Toms River	K-PG	16,960	14
Union Township	K-6	757	2
		<hr/> 59,976	<hr/> 74

Salem County:

Alloway Township	K-8	447	2
Elmer	"	246	1
Elsinboro	"	134	1
Lower Alloway Creek	"	282	1
Mannington Township	"	248	1
Oldmans Township	"	326	3
Penns Grv. - Upper Penns Neck Reg.	K-12	2,817	7
Pennsville	"	3,389	7
Pittsgrove Township	K-8	836	2
Quinton Township	K-8	409	1
Salem City	K-12	2,157	3
Salem Vocational	11-PG	241	2
Upper Pittsgrove Township	K-8	510	3
Woodstown-Pilegrove Reg.	K-12	1,690	3
		<hr/> 13,732	<hr/> 37

Coastal County Total (298)		699,103	1,194
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State Total		1,429,517	2,444
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Public School Systems
1976-77

New York

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
New York City	K-12	1,096,460	946
(N.Y.C. includes the counties of Bronx, Kings, New York, Queens, and Richmond)			
<u>Nassau County:</u>			
Baldwin	K-12	7,985	13
Bellmore	K-6	1,836	3
Bellmore-Merrick H.S.	7-12	10,608	7
Bethpage	K-12	4,977	5
East Meadow	"	11,612	11
East Rockaway	"	1,904	3
East Williston	"	1,725	3
Elmont	PK-6	3,519	6
Farmingdale	K-12	10,584	8
Floral Park Bellerose	K-6	1,626	2
Franklin Square	"	2,042	3
Freeport	K-12	7,631	7
Garden City	"	4,652	7
Glen Cove	PK-12	4,495	8
Great Neck	"	7,916	15
Hempstead	"	5,447	10
Herricks	K-12	4,777	6
Hewlett Woodmere	"	4,658	6
Hicksville	"	9,142	10
Island Park	K-8	1,562	3
Island Trees	K-12	4,335	6
Jericho	"	3,005	6
Lawrence	PK-12	6,912	8
Levittown	K-12	13,383	16
Locust Valley	"	3,161	4
Long Beach	PK-12	5,857	8
Lynbrook	K-12	3,686	7
Malverne	"	2,691	4
Manhasset	"	2,512	3
Massapequa	"	14,214	11
Medical Center	"	14	1
Merrick	K-6	2,518	3
Mineola	K-12	4,039	7
New Hyde Park	K-6	1,614	4
North Bellmore	"	2,833	6
North Merrick	"	1,413	3
North Shore	K-12	3,113	5
Oceanside	"	9,504	10
Oyster Bay - East Norwich	PK-12	2,276	5

New York
Nassau County (continued)

Plainedge	K-12	5,478	7
Plainview - Old Bethpage	"	8,280	11
Port Washington	"	6,309	9
Rockville Centre	"	4,274	8
Roosevelt	PK-12	4,247	6
Roslyn	"	3,442	7
Seaford	K-12	4,276	5
Sewanhaka	7-12	10,948	6
Syosset	K-12	7,246	13
Uniondale	"	6,533	8
Valley Stream CHS	7-12	6,181	4
Valley Stream Hempstead 24	K-6	1,246	4
Valley Stream Hempstead 30	"	1,319	3
Valley Stream Hempstead 13	"	2,312	4
Wantagh	K-12	4,760	6
West Hempstead	"	3,616	5
Westbur	PK-12	3,890	6
		<hr/> 280,135	<hr/> 365

Suffolk County:

Amagansett	K-8	126	1
Amityville	K-12	4,209	5
Babylon	"	2,511	3
Bay Shore	"	6,548	7
Bayport - Blue Point	"	3,382	5
Brentwood	PK-12	20,631	18
Bridgehampton	K-12	250	1
Center Moriches	"	1,218	2
Central Islip	"	7,754	8
Cold Spring Harbor	"	2,045	4
Commack	"	14,031	20
Comsewogue	"	5,807	7
Connetquot	"	10,332	11
Copiague	"	6,040	6
Deer Park	"	7,964	8
East Hampton	"	1,511	3
East Islip	"	7,291	8
East Moriches	K-8	571	1
East Quogue	K-6	313	1
Eastport	K-12	888	1
Elwood	"	4,457	5
Fishers Island	"	95	1
Greenport	"	898	1
Half Hollow Hills	"	13,077	16
Hampton Bays	"	1,538	2
Harborfields	"	4,851	6
Hauppauge	"	7,805	7
Huntington	"	7,343	10
Islip	"	5,015	5

New York
Suffolk County(continued)

Kings Park	K-12	6,507	7
Laurel	1-6	69	1
Lindenhurst	K-12	10,362	11
Little Flower	PK-8	99	1
Mastic Beach - Wm. Floyd	K-12	6,381	5
Mattituck - Cutchogue	"	1,302	2
Middle Country	"	16,694	16
Middle Island	"	6,492	6
Miller Place	"	2,394	3
Montauk	K-8	296	1
Mount Sinai	K-6	960	1
New Suffolk	"	21	1
North Babylon	K-12	9,214	10
Northport - E. Northport	"	9,572	11
Ocean Beach - Fire Island	PK-1	41	1
Oysterponds	K-6	124	1
Patchogue - Medford	K-12	10,992	11
Port Jefferson	PK-12	2,360	3
Quogue	K-6	85	1
Remsenburg Speonk	"	168	1
Riverhead	K-12	4,483	7
Rocky Point	"	2,503	2
Sachem	"	19,138	17
Sag Harbor	"	771	2
Sagaponack	1-4	22	1
Sayville	K-12	5,118	6
Shelter Island	"	250	1
Shoreham - Wading River	K-11	1,917	5
Smithtown	K-12	15,001	19
South Country	"	4,530	6
South Haven	K-6	76	1
South Huntington	K-12	10,392	10
South Manor	K-6	379	1
Southampton	K-12	1,706	3
Southold	"	1,003	3
Springs	K-8	365	1
Three Village	K-12	10,811	9
Tuckahoe	K-8	148	1
Wainscott	1-4	13	1
West Babylon	K-12	6,715	8
West Islip	"	8,969	12
Westhampton Beach	"	1,504	3
Wyandanch	PK-12	2,735	5
		<hr/> 331,183	<hr/> 391

Westchester County:

Abbott House	1-12	286	1
Ardsley	K-12	2,378	4
Armonk	"	2,185	5

(continued)

New York
Westchester County (continued)

Bedford - Mount Kisco	PK-12	4,429	7
Blind Brook-Rye	K-12	1,329	2
Briarcliff Manor	"	1,324	3
Bronxville	"	1,361	2
Chappaqua	"	3,995	5
Croton-Harmon	"	1,698	3
Dobbs Ferry	"	1,406	3
Eastchester	"	3,177	6
Echo Hills	5-9	304	1
Edgemont	K-12	1,782	3
Elmsford	"	987	3
Greenburgh	PK-12	3,475	8
Greenburgh-Graham	2-12	157	1
Harrison	K-12	3,729	6
Hastings-On-Hudson	"	1,897	3
Hawthorne Knolls	3-11	351	1
Hendrick Hudson	K-12	2,968	6
Irvington	"	1,750	3
Katonah-Lewisboro	"	3,496	6
Lakeland	"	8,016	10
Mamaroneck	PK-12	6,073	6
Mount Pleasant-Cottage	1-12	338	1
Mount Vernon	PK-12	11,011	14
Mt. Pleasant	K-12	2,700	5
New Rochelle	PK-12	10,682	13
North Salem	K-12	1,454	4
Ossining	PK-12	5,092	6
Peekskill	K-12	3,433	6
Pelham	"	2,852	6
Pleasantville	"	1,738	4
Pocantico Hills	K-8	405	1
Port Chester	K-12	3,836	7
Public Sch. of the Tarrytowns	PK-12	2,772	6
Rye	K-12	3,030	4
Rye Neck	"	1,567	4
Scarsdale	"	4,931	7
Somers	"	2,990	4
St. Christophers	"	70	1
St. Peters	--	100	1
Tuckahoe	K-12	1,047	2
Valhalla	"	1,897	4
White Plains	PK-12	7,673	15
Yonkers	PK-12	27,786	45
Yorktown	K-12	5,028	6
Yorktown-Wiltwyck	K-8	135	1
		161,120	265
Coastal County Total (172)		1,868,898	1,967
State Total		3,381,925	4,388

Public School Systems
1976-77

Connecticut

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
<u>Fairfield County</u>			
Bethel	K-12	3,552	6
Bridgeport	PK-12	24,046	38
Brookfield	K-12	3,158	5
Danbury	PK-12	11,116	16
Darien	K-12	4,999	9
Easton	K-8	1,379	2
Fairfield	PK-12	11,076	16
Greenwich	PK-12	10,857	16
Monroe	K-12	3,945	5
New Canaan	"	4,335	6
New Fairfield	"	2,599	3
Newtown	"	4,447	5
Norwalk	PK-12	15,505	15
Redding	K-8	1,847	2
Ridgefield	K-12	5,976	8
Shelton	K-12	6,909	13
Sherman	K-8	436	1
Stamford	PK-12	19,227	24
Stratford	K-12	9,267	18
Trumbull	PK-12	8,166	11
Weston	"	2,354	3
Westport	"	6,644	14
Wilton	K-12	4,366	6
		<hr/> 166,206	<hr/> 242
<u>Middlesex County:</u>			
Chester	K-6	663	1
Clinton	K-12	2,850	4
Cromwell	"	1,832	3
Deep River	K-6	845	1
East Haddam	K-12	1,089	2
East Hampton	"	2,103	5
Essex	K-6	877	1
Middletown	K-12	6,291	14
Old Saybrook	"	2,106	4
Portland	"	1,912	5
Regional Dist. 13	"	2,387	7
Regional Dist. 17	K-9	2,230	4
Regional H.S. 04	7-12	1,170	2
Westbrook	K-12	1,077	2
		<hr/> 27,432	<hr/> 55

Connecticut (continued)New Haven County:

Ansonia	PK-12	3,299	8
Bethany	K-6	1,109	2
Branford	K-12	4,430	9
Cheshire	PK-12	5,178	8
Derby	K-12	2,298	6
East Haven	"	5,440	12
Guilford	PK-12	4,063	7
Hamden	"	8,814	16
Madison	K-12	3,310	5
Meriden	PK-12	10,590	14
Milford	K-12	11,249	20
Naugatuck	"	5,576	10
New Haven	PK-12	21,017	46
North Branford	K-12	3,156	7
North Haven	"	5,330	9
Orange	K-6	3,351	5
Oxford	K-8	1,469	2
Regional Dist. 15	K-12	2,900	6
Regional Dist. 16	K-8	2,541	4
Seymour	K-12	2,853	6
Wallingford	PK-12	8,398	14
Waterbury	"	17,162	33
West Haven	"	8,964	16
Wolcott	"	3,969	7
Woodbridge	K-6	1,840	3
		<hr/> 148,306	<hr/> 275

New London County:

Bozrah	K-8	536	1
Colchester	K-12	1,908	3
East Lyme	"	3,660	5
Franklin	K-8	362	1
Griswold	K-12	1,689	2
Groton	PK-12	8,322	17
Lebanon	K-12	1,294	2
Ledyard	"	3,955	6
Lisbon	K-8	714	1
Montville	K-12	4,340	8
New London	"	4,454	9
North Stonington	"	1,129	2
Norwich	PK-8	7,813	15
Preston	K-8	972	3
Reg. Dist. 018	K-12	1,690	4
Salem	K-8	464	1
Sprague	"	607	1
Stonington	K-12	3,418	9
Voluntown	K-8	364	1
Waterford	K-12	4,307	7
		<hr/> 51,998	<hr/> 98

Coastal County Total (82)
State Total

393,942
640,255

670
1,116

Public School Systems
1976-77

Rhode Island

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
<u>Bristol County:</u>			
Barrington	K-12	4,298	9
Bristol	"	3,472	9
		<hr/> 7,770	<hr/> 18
<u>Kent County:</u>			
Coventry	K-12	5,801	11
East Greenwich	"	2,564	5
Warwick	"	18,600	33
West Warwick	"	4,299	6
		<hr/> 31,264	<hr/> 55
<u>Newport County:</u>			
Jamestown	K-8	714	1
Little Compton	"	644	1
Middletown	K-PG	3,720	8
Newport	"	5,288	12
Portsmouth	K-12	3,356	7
Tiverton	"	2,995	6
Warren	"	2,091	6
		<hr/> 18,808	<hr/> 41
<u>Providence County:</u>			
Burrillville	K-PG	2,722	5
Central Falls	K-12	2,668	6
Cranston	"	13,750	29
Cumberland	"	7,143	17
East Providence	"	9,722	20
Foster Elem.	K-4	314	3

(continued)

Public School Systems 1976-77, Rhode Island
Sheet 2

Providence County (continued):

Foster-Glocester Reg. High	5-12	1,593	2
Glocester Elem.	K-4	608	3
Johnston	K-12	4,602	10
Lincoln	"	3,642	7
North Providence	"	4,579	10
North Smithfield	"	2,210	4
Pawtucket	"	11,159	16
Providence	"	20,889	41
Scituate	"	1,852	4
Smithfield	"	3,469	6
Woonsocket	"	8,668	20
		<hr/> 99,590	<hr/> 203

Washington County:

Chariho Reg. High	7-12	1,510	1
Charlestown Elem.	K-6	466	1
Exeter-West Greenwich	K-8	1,252	3
Hopkinton Elem.	K-6	1,001	3
Narragansett	K-9	1,710	2
New Shoreham	K-12	105	1
North Kingstown	K-12	4,824	9
Richmond Elem.	K-6	524	1
South Kingstown	K-12	3,067	9
Westerly	K-12	4,117	8
		<hr/> 18,576	<hr/> 38

Coastal County Total		176,008	355
State Total		176,008	355

Public School Systems
1976-77

Massachusetts

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
<u>Barnstable County:</u>			
Barnstable	K-12	5,594	11
Bourne	"	3,051	8
Chatham	"	1,021	3
Dennis-Yarmouth	9-12	1,495	1
Falmouth	K-12	5,394	8
Harwich	"	1,684	3
Nauset	5-12	1,607	2
<u>(Supervisory Unions):</u>			
<u>Union 10:</u>			
Mashpee	K-6	264	1
Sandwich	K-12	1,148	2
<u>Union 11:</u>			
Dennis	K-8	1,255	2
Yarmouth	"	2,386	4
<u>Union 14:</u>			
Provincetown	K-12	746	4
Truro	K-6	189	1
<u>Union 54:</u>			
Brewster	K-4	254	1
Eastham	K-4	194	1
Orleans	"	228	1
Wellfleet	"	162	1
		<hr/> 26,672	<hr/> 54
<u>Bristol County:</u>			
Acushnet	K-9	1,282	3
Attleboro	K-12	7,517	15
Dartmouth	"	4,547	6
Dighton-Rehoboth	9-12	1,134	1
Easton	K-12	3,661	8
Fairhaven	"	3,433	8
Fall River	"	14,069	43
Freetown-Lakeville Region	5-12	1,718	3
Mansfield	K-12	3,115	8
New Bedford	"	16,806	31
North Attleborough	"	4,559	10
Norton	"	2,433	3
Raynham	K-8	1,633	5
Seekonk	K-12	3,146	7
Somerset	"	4,852	8
Swansea	"	2,937	10
Taunton	"	8,133	18
Westport	"	2,513	7
(continued)			

Massachusetts
Bristol County (continued)

(Supervisory Unions):

Union 34:

Freetown	K-4	563	1
Lakeville	"	543	3

Union 37:

Berkeley	K-8	490	2
Dighton	"	939	2
Gosnold	"	3	1
Rehoboth	"	1,500	4

		91,526	207
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Dukes County:

Martha's Vineyard Reg.	9-12	483	1
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(Supervisory Unions):

Edgartown:

Edgartown	K-6	21	1
Edgartown	K-8	252	1
Edgartown	K-6	61	1
Edgartown	K-8	256	1
Edgartown	K-8	421	1

		1,494	6
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Essex County:

Amesbury	K-12	2,707	3
Andover	"	6,362	9
Beverly	"	8,425	17
Danvers	"	5,658	12
Georgetown	"	1,687	4
Gloucester	"	6,536	14
Hamilton-Wenham Reg.	9-12	899	1
Haverhill	K-12	9,213	23
Ipswich	"	2,567	8
Lawrence	"	9,309	19
Lynn	"	16,004	30
Lynnfield	"	3,239	6
Marblehead	"	4,607	10
Masconomet Reg.	7-12	2,196	1
Methuen	K-12	6,546	16
Middleton	K-6	603	2
Nahant	K-9	721	4
Newburyport	K-12	3,350	6
North Andover	"	3,499	7
Peabody	"	11,097	14
Pentucket Reg.	7-12	1,505	2
Rockport	K-12	993	5
Salem	"	6,973	17
Saugus	"	6,278	15
Swampscott	"	3,138	6
Triton	7-12	1,352	1

Massachusetts (continued):(Supervisory Unions):Union 48:

Essex	K-8	482	1
Manchester	K-12	1,332	2

Union 53:

Groveland	1-6	889	2
Merrimac	K-6	662	2
West Newbury	"	413	2

Union 57:

Hamilton	K-8	1,204	3
Wenham	"	561	2

Union 58:

Boxford	K-6	711	2
Topsfield	"	986	2

Union 68:

Newbury	K-6	557	3
Rowley	"	473	2
Salisbury	"	786	2

		134,520	277
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Nantucket County:

Nantucket	K-12	928	4
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Norfolk County:

Avon	K-12	1,373	3
Bellingham	"	4,102	5
Braintree	"	9,108	18
Brookline	"	6,340	11
Canton	1-12	4,442	8
Cohasset	K-12	1,967	3
Dedham	"	6,350	11
Dover-Sherborn Reg.	7-12	1,086	2
Foxborough	K-12	4,013	6
Franklin	"	5,496	11
Holbrook	"	2,874	7
King Philip Reg.	7-12	2,035	3
Medfield	K-12	3,006	5
Medway	"	2,611	5
Millis	"	1,783	3
Milton	"	4,504	7
Needham	"	7,339	13
Norfolk	K-6	826	2
Norwood	K-13	7,392	11
Plainville	K-6	772	2
Quincy	K-14	16,047	29
Randolph	K-12	7,333	11
Sharon	"	3,597	6
Stoughton	"	6,533	9
Walpole	"	5,043	9
Wellesley	"	6,690	14
Westwood	"	3,734	9
Weymouth	K-14	14,428	28

(continued)

Massachusetts
Norfolk County (continued):
Wrentham

K-6	833	3
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(Supervisory Unions):

Union 50:

Dover

K-6	587	2
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Sherborn

"	634	2
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	142,878	258
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Plymouth County:

Abington

K-12	3,194	6
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Bridgewater

K-8	2,020	5
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Bridgewater-Raynham

9-12	1,408	1
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Brockton

K-12	19,751	27
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Duxbury

"	3,030	4
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East Bridgewater

"	2,523	4
---	-------	---

Hanover

"	3,351	6
---	-------	---

Hanson

K-8	1,827	4
-----	-------	---

Hingham

K-12	5,339	9
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Hull

"	2,991	4
---	-------	---

Marshfield

"	5,605	8
---	-------	---

Middleborough

"	3,588	14
---	-------	----

Norwell

"	2,613	6
---	-------	---

Old Rochester

7-12	1,182	2
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Plymouth-Carver

"	3,144	2
---	-------	---

Rockland

K-12	3,992	6
------	-------	---

Scituate

"	5,372	7
---	-------	---

Silver Lake

7-12	2,947	2
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Wareham

K-12	3,272	8
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West Bridgewater

"	1,691	5
---	-------	---

Whitman

K-8	2,605	8
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Whitman - Hanson

9-12	1,635	1
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(Supervisory Unions):

Union 31:

Halifax

K-6	734	1
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Kingston

"	909	2
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Pembroke

"	2,267	4
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Plympton

"	261	1
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Union 55:

Marion

K-6	512	1
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Mattapoisett

"	727	2
---	-----	---

Rochester

"	253	1
---	-----	---

Union 62:

Carver

K-5	622	2
-----	-----	---

Plymouth

K-6	2,929	9
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	92,294	162
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(Continued)

Massachusetts:Suffolk County:

Boston	K-13	91,973	186
Chelsea	K-12	4,388	7
Revere	K-12	7,795	17
Winthrop	"	3,765	6
		<hr/>	<hr/>
		107,921	216
Coastal County Total (152)		598,233	1,184
State Total		1,189,874	2,425

Public School Systems
1976-77

New Hampshire

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
<u>Rockingham County:</u>			
<u>(Supervisory Unions):</u>			
<u>Derry Coop</u>			
Derry Coop	1-8	2,345	5
<u>Londonderry</u>			
Londonderry	"	1,555	3
<u>Epping</u>			
Chester	"	285	1
Epping	1-12	684	2
Fremont	1-8	184	1
Newmarket	1-12	671	2
<u>Exeter</u>			
Brentwood	1-6	192	1
East Kingston	"	141	2
Exeter	1-PG	3,054	5
Kensington	1-6	129	1
Newfields	"	95	1
Stratham	"	243	1
<u>Hampton</u>			
Hampton	K-8	1,245	3
Hampton Falls	1-7	185	1
North Hampton	1-8	558	1
Seabrook	1-8	773	1
South Hampton	"	86	1
Winnacunnet Coop	9-12	1,339	1
<u>Portsmouth</u>			
Greenland	1-8	315	1
New Castle	1-6	68	1
Newington	K-6	58	1
Portsmouth	K-PG	6,021	11
Rye	1-8	537	2
<u>Timberlane Reg.</u>			
Hampstead	1-8	497	1
Timberlane Regional	1-PG	2,780	6
<u>Salem</u>			
Salem	1-PG	5,333	9
Coastal County Total (26)		29,373	65
State Total		169,022	451

Public School Systems
1976-77

Maine

<u>Name of Unit</u>	<u>Grade Span</u>	<u>Student Population</u>	<u># of Schools</u>
<u>Cumberland County:</u>			
Brunswick	K-12	3,410	6
Cape Elizabeth	"	872	4
Falmouth	"	1,527	5
Freeport	"	1,346	5
Gorham	"	2,005	6
Portland	"	11,135	22
Raymond	K-8	356	1
Scarborough	K-12	2,520	8
School Adm. Dist. 15	"	1,602	4
School Adm. Dist. 51	"	1,937	7
School Adm. Dist. 61	"	2,015	7
School Adm. Dist. 62	K-8	214	1
South Portland	K-PG	5,055	15
Westbrook	K-12	3,593	9
Windham	"	2,413	7
Yarmouth	"	1,336	4
		<hr/> 41,336	<hr/> 111
<u>Hancock County:</u>			
Airline Com. Sch. Dist.	K-8	58	1
Deer Isle - Stonington CSD	K-12	619	4
Flanders Bay CSD	9-12	423	1
Mt. Desert CSD	"	664	1
Sch. Adm. Dist. 26	K-8	63	1
Sch. Adm. Dist. 76	"	38	1
Schoodic CSD	"	391	4
<u>(Supervisory Unions):</u>			
<u>Union 076:</u>			
Brooklin	2-8	135	2
Sedgwick	K-1	63	2
<u>Union 091:</u>			
Bucksport	K-12	1,457	4
Orland	K-8	224	1
Orrington	"	558	3
<u>Union 092:</u>			
Ellsworth	K-12	1,404	3
Hancock	K-8	239	1
Lamoine	"	143	1
Surry	"	122	1
Trenton	"	67	1
<u>Union 093:</u>			
Blue Hill	"	217	1
Brooksville	"	101	1
Castine	"	96	1
Penobscot	1-8	153	1

(continued)

MaineHancock County: (continued)Supervisory Union 096:

Gouldsboro	K-8	213	1
Steuben	"	194	1
Winter Harbor	"	208	1

Union 098:

Bar Harbor	K-8	515	2
Cranberry Isles	"	21	2
Long Island Plt.	K-12	6	1
Mt. Desert	K-8	337	1
Southwest Harbor	"	314	1
Tremont	"	169	1
		<hr/> 9,212	<hr/> 47

Knox County:

Apl-Hp-Lnvl CSD	1-8	379	3
Isle Au Haut	K-8	4	1
Sch. Adm. Dist. 05	K-12	2,245	7
Sch. Adm. Dist. 07	"	83	1
Sch. Adm. Dist. 08	"	250	1
Sch. Adm. Dist. 28	"	1,585	4
Sch. Adm. Dist. 50	"	1,164	6
Sch. Adm. Dist. 65	K-8	14	1
		<hr/> 5,724	<hr/> 24

Lincoln County:

Boothbay-Boothbay Hbr. CSD	K-12	889	4
Great Salt Bay CSD	1-8	313	2
Monhegan Plt.	K-8	12	1
Sch. Adm. Dist. 40	K-12	2,254	9

(Supervisory Unions):Union 048:

Dresden	K-8	123	2
Georgetown	K-6	67	1
Phippsburg	K-8	225	1
Wiscasset	K-12	959	3
Woolwich	K-8	378	1

Union 049:

Edgecomb	K-6	71	1
Southport	K-8	76	1

Union 074:

Bremen	K-8	65	1
Bristol	"	239	2
Nobleboro	"	175	1
South Bristol	1-8	101	1

5,947

31

(continued)

Maine (continued)
Sagadahoc County:

Sch. Adm. Dist. 75	K-12	2,981	9
(Supervisory Unions):			
<u>Union 043:</u>			
Litchfield	K-8	309	2
Monmouth	K-12	1,027	2
Richmond	"	594	3
Wales	"	129	2
<u>Union 047:</u>			
Bath	"	2,593	8
West Bath	1-8	169	1
		<hr/> 7,802	<hr/> 27

Waldo County:

Isleboro	K-12	94	1
Sch. Adm. Dist. 03	"	1,727	8
Sch. Adm. Dist. 34	"	2,187	11
Sch. Adm. Dist. 56	"	1,101	6
		<hr/> 5,109	<hr/> 26

Washington County:

East Range Li. CSD	1-8	25	1
Moosabec CSD	K-12	481	4
School Adm. Dist. 14	"	349	1
Sch. Adm. Dist. 19	"	483	3
School Adm. Dist. 37	"	1,058	6
School Adm. Dist. 77	K-8	520	6
(Supervisory Unions):			
<u>Union 102:</u>			
Jonesboro	1-8	824	2
Machias	K-12	732	4
Wesley	K-8	24	1
<u>Union 104:</u>			
Charlotte	K-8	28	1
Eastport	K-12	584	3
Pembroke	1-8	130	1
Perry	"	108	1
Robbinston	K-8	57	1
<u>Union 106:</u>			
Alexander	K-8	47	1
Calais	K-12	1,074	3
<u>Union 107:</u>			
Baileyville	K-12	789	2
Princeton	1-8	238	1

(continued)

Maine
Washington County (continued)

Union 108:
Vanceboro

1-8	<u>72</u>	<u>1</u>
	7,623	43

York County:

Acton	108	120	1
Biddeford	K-12	3,108	7
Kittery	"	1,824	5
Sanford	"	3,703	9
Sch. Adm. Dist. 06	"	3,610	13
Sch. Adm. Dist. 35	"	2,039	4
Sch. Adm. Dist. 57	"	2,132	9
Sch. Adm. Dist. 60	"	2,277	5
Sch. Adm. Dist. 71	"	2,078	5
Wells	"	1,256	3
York	"	1,585	4

(Supervisory Unions):

Union 007:

Dayton	K-6	110	1
Saco	K-8	2,004	4

Union 008:

Arundel	K-8	328	1
Old Orchard Beach	K-12	1,243	4
		<u>27,417</u>	<u>75</u>

Coastal County Total (114)

110,170 384

State Total

241,256 815